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BRONZE STAR MEDAL AWARDS

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2d Lt. Herman C. Schultz
Cpl. Robert L. Hand
Cpl. James H. Stinnett
Pvt. James M. Mumbaugh

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SFC Robert E. Stone
Sgt. Gerald D. Gordon
Sgt. Ezekiel Owens
Sgt. Denver Greer
Sgt. Obrin Freeman
Cpl. Milton H. Baumgardner
Cpl. Fidel Cortinas
Cpl. Paul Cumpton
Cpl. Walter D. Emmons
Cpl. Robert LeGraff
Cpl. John E. MacMahon
Cpl. Arthur G. Peters
Cpl. Robert Fryer
Cpl. Joseph D. Geraci
Pfc. Joseph Bellamy
Pfc. Marshall W. Dunn, Jr.
Pfc. Horace L. Hunt
Pfc. Fernando Fuertes, Jr.
Pfc. Delton E. Johnson
Pfc. Jose Lopez
Pfc. Hollis W. Neeley
Pfc. Eugenio Pedrozza
Pfc. Robert A. Webb, Jr.
Pfc. Edgar L. Weems
Pfc. Johnnie Whitmire
Pfc. Orval L. Willis
Pfc. William J. Heam
Pfc. Herman L. Aycott
Pfc. Richard M. Eastland
Pvt. Walter L. Best

Pvt. James C. Chaney
Pvt. Robert F. Morris
Pvt. M. L. Moore
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Maj. Jack C. Maldonado (OLC)
Maj. Edgar L. Casey (OLC)
Capt. Joseph Errigo (OLC)
Cpl. Fidel Contino (OLC)

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Sgt. Calvin W. Thomas
Cpl. Joe Whitehurst
Cpl. Sterling D. Tackett

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Capt. Ray J. McManus
Capt. Ronald D. Moton
Capt. Gilbert B. Sage, Jr.
Capt. Walter Wartonic
Capt. James H. Hogan
Capt. Ransom B. Cubbage
Capt. James R. McClymont
Chaplain (Capt.) James H. Fisher
Capt. Thomas G. Taft
1st Lt. Phillip H. Stevens

Cpl. Walter D. Emmons
Cpl. Robert LeGraff
Cpl. John E. MacMahon
Cpl. Arthur G. Peters
Cpl. Robert Fryer
Cpl. Joseph D. Geraci

68th AAA Gun Battalion
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Maj. Francis X. Gallant
Capt. Edgar H. Stephenson
Capt. Richard G. Fazakerley
1st Lt. Lyle R. Larson
1st Lt. Fred E. Renaud
1st Lt. Alexander Shackleford

865th AAA AW Battalion (SP)
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Sgt. Burley T. Blankenship
Sgt. Harold D. Allen
Cpl. Richard J. Vertz
Cpl. Kenneth W. Shields
Pvt. Frank A. Pierce
Pvt. Lawrence E. Rogers

82d AAA AW Battalion (SP)

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Capt. Joseph Errigo
1st Lt. James W. Root
1st Lt. John Schmutz (Posthumous)
1st Lt. James W. Wilson
M Sgt. Joseph F. Dutra
M Sgt. John F. Sullivan

Pfc. Robert A. Webb, Jr.
Pfc. Edgar L. Weems
Pfc. Johnnie Whitmire
Pfc. Orval L. Willis
Pfc. William J. Heam
Pfc. Herman L. Aycott
Pfc. Richard M. Eastland
Pvt. Walter L. Best

865th AAA AW Battalion (SP)
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1st Lt. Byron L. Stevens
M Sgt. Zaragosa Maciel
SFC J. Victor King

933rd AAA AW Battalion (SP)
M Sgt. James A. Henderson

3rd AAA AW Battalion (SP)
SFC Warren H. George

50th AAA AW Battalion (SP)
Capt. Leland R. Downing
M Sgt. Donald L. Branscum
SFC Emile P. Ordoyne
SFC James A. Couillard
M Sgt. Francesco A. Olivieri
Sgt. Carl H. MacDermott
Sgt. Joe E. Marshall
PFC Charles K. Horst, Jr.
M Sgt. William E. Ray

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68th AAA Gun Battalion

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3rd AAA AW Battalion (SP)

2d Lt. Billy C. Tubberville
Pfc. Daniel L. Goode

15th AAA AW Battalion (SP)

SFC Paul J. Tate

Cpl. Avelino R. Barrows
Cpl. Burton C. Caswell, Jr.

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Pfc. Edward A. Whisehunt
Pvt. Charles E. Brady

Pfc. Richard D. Brown

Pfc. John R. Kocevor

Pfc. Ray W. Willis

Pfc. James H. Wiggins

3rd AAA AW Battalion (SP)

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Pvt. Joseph H. Cox
Pfc. John R. Driscoll
Cpl. Daniel L. Goode, Jr.
Sgt. James W. Goff
1st Lt. Carl M. Guelzo
Pvt. Thomas E. Panken
Cpl. Paul J. Astle
Pfc. Robert J. Boggs
Cpl. Giovanni E. Bonaro
2d Lt. Robert E. Hayden
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Pvt. Robert W. Bryant

Sgt. Peter T. Carney

WO2G Hardie M. Evans

Cpl. Joseph M. Duffy

Cpl. James H. Goutermont

Cpl. John Revazzo

1st Lt. Tony Zelenko

Pfc. Gary K. Bender

Pfc. Calvin C. Sager

SFC Paul L. McRoberts

Sgt. Corey L. Clayton

Sgt. George Gillis

Cpl. Ira Duncil

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Pvt. Frank A. Pierce
Pvt. Lawrence E. Rogers

Pfc. Walter E. Keller

Sgt. Joseph F. Haggerty

Sgt. James B. Mallory

Cpl. Robert L. Boone

Cpl. J. T. Gibson

Cpl. Arthur R. Gideons

Cpl. James E. Morris

Cpl. John T. Travis

Cpl. John Sabo

Pfc. Harold R. Kittridge

Pfc. Robert F. McKiernan

Pvt. Joseph A. Buckman

Pvt. Kenneth Wilkinson, Jr.

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Cpl. Alfred Rubuffo
Cpl. Orville Reese

Pfc. Douglas Brown

Pfc. Robert Franklin

M Sgt. Wade Holt

Pfc. Francis M. Dugan

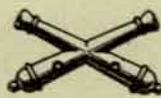
15th AAA AW Battalion (SP)

Pfc. Thomas E. White
Pvt. Paul W. Erwin
SFC Jay P. Crowley

Pfc. Melvin G. Kunz

Pfc. Marvin S. Stoffel

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ANTIAIRCRAFT AIR

By Major General

FOUR

SINCE the third report to the ANTI-AIRCRAFT JOURNAL on Korea, there have been changes in the over-all picture.

The United Nations forces are advancing and the reported "southward surge of the thundering hordes" has not yet developed. The enemy has with-

drawn further north, where the hostile forces are being regrouped, reinforced and rearmed to renew the epic struggle of manpower versus mechanization.

The weather has changed from the biting penetration of sub-zero temperatures to the inundations of spring thaws

and early rains with variations reintroducing the rasping dust clouds which combine with the "sweat of battle" to make the ground soldier's role the most miserable—if perhaps the most typically picturesque—of all fighting men. It is either a too-much-mud or a too-much-

One hour of fighting—ten thousand rounds of caliber .50 ammo—Cpl. Willie Burden, Pfc. Tommy Gray, Pfc. Virgil Linden and Sgt. Antonio Garzo, all of the 21st AAA AW Bn. display the mound of shell cases used in a recent ground support action with the 25th Infantry Division.

U. S. Army Photo



ARTILLERY IN KOREA

William F. Marquat

ORT

dust panorama—neither of which is relished from the viewpoint either of human comfort or facility of military operations.

The Antiaircraft Artillery continues its magnificent performances in thwarting the enemy on the earth's surface and in the air. Admittedly, there has been little air antiaircraft contact, but the Communist military aviation elements meticulously have avoided the areas where the UN air defense antiaircraft is emplaced because they know what kind of reception they would get.

ROTATION has actually begun under difficult staff planning circumstances and while not yet fully developed, the fact that progress is being made inspires hopes for the future. The psychology of the American soldier manifests itself in morale being highest in the forward area outfits where combat action is greatest. In some battalion organizations an inter-unit rotation is being practiced in which the battalion headquarters and forward area batteries make frequent shifts in personnel in the interest of improving the over-all situation.

R and **R** (Rest and Relaxation) is bringing combat soldiers back to Japan for brief periods of relaxation. Bright colored Korean identification shoulder loops identify these men as veterans and Japan extends them the plush treatment in every way possible. The most popular demand item? You probably have guessed it: not food, not parties, not sight-seeing trips, but plain and fancy **BATHS**. They take steam baths, tub baths and shower baths and enjoy them. When asked, "why so many baths," they reply,



U. S. Army Photo

Lt. Wilber R. Webster of the 82nd AAA Bn. and Capt. Carroll D. Herrod, 49th FA Bn., wounded and captured by Chinese Communists, escaped to the 1st Cavalry lines.

"to get the mud and dust out and to see what I really look like." Of course the field bath units in Korea do a rushing business, but somehow when you can lounge around in plenty of water in a rest area and remove the dust out of your eyes at leisure, the general picture takes on a much rosier hue.

Frequent visits to the front areas by the Eighth Army's brilliant and indefatigable commander, General Matthew B. Ridgway, keep the men on their toes. The corps and division commanders always include the Antiaircraft Artillery when they make their rounds of the fighting men. Brigadier General J. G. Devine, commanding general of the 40th AAA Brigade, has also made an on-the-ground survey of the Korean Antiaircraft Artillery units.

Did you ever hear of ground fire re-

inforcement of combat aviation in flight? Well, here it is. It was during the battle to retake Seoul, the South Korean capital, which for a time was strongly held by the Red Chinese and later abandoned. A dual 40 millimeter weapon of the 3rd AAA AW Battalion was in position overlooking the famous Han River. SFC Dale L. Tusing, Corporal Christopher Castiglione, Corporal Homer E. Phillips and Corporal Thomas J. Oswald made up the crew.

Seoul was under strafing attack from U. S. Marine Corsairs when suddenly the planes came under intense machine gun fire from the top of a building over which they were flying. The ack-ack gunners located the enemy tracers and followed them to their source. They opened fire on the enemy machine guns with the twin-40's and the nest of hos-



Experimental shield attached to turret of M16 developed by the 21st AAA AW Bn. (SP).

tile weapons immediately ceased action and remained silent during the remainder of the day.

The Corsairs' pilots flew over the U. S. ground crew, waved and dipped their wings in salute and proceeded on with the business at hand.

LIEUT. Col. Walter Killilae's 82nd AAA AW Battalion (SP) has had some part of its organization in tough combat in each report period in the past. The Second Infantry Division, of which the 82nd AAA Battalion is an organic part, had been one of the most active of the war. Both the division and the antiaircraft artillery battalion have performed with distinction and have suffered heavy losses in so doing.

Furthermore the 82nd Battalion was among the first to develop the infantry-armor-ground support antiaircraft techniques. Recently the batteries have been intensively engaged in this type of activity in connection with the numerous forays of the division units and special task forces to locate the enemy and develop his defensive installations. One or two antiaircraft artillery sections accompany each patrol, and elsewhere in the ANTIACRAFT JOURNAL are pictures showing these units in action along with the leading tanks.

In the vicinity of Haktam-ni, Support Force 21, which included 2nd Division and ROK 8th Division elements, located a road block heavily covered by small arms, machine gun and mortar fire. Battery D, attached to Support Force 21, placed some M16 and M19 weapons at the head of the column along with the leading tanks. The Red Chinese hit hard from the hills, attacked with fire power the leading vehicles in the column and, following their favorite tactic, swarmed down the hills in great strength with

bangalore torpedoes and hand grenades. The antiaircraft crews took a heavy toll of the enemy but suffered heavy losses themselves. In several instances the infantry troops assisted in manning the weapons as the original crews were hit. U. N. troops at times lined up on one side of the road and tossed grenades at the enemy attacking from the other side of the road.

The Task Force hit other road blocks en route, but finally reached the ford just north of Hoensong. Battery D, which had suffered heavily in the Kunuri-Sunchon battles before, again lost officers and men in this action.

Commanders of fire units in this action were Sgt. Roy P. Wood, Sgt. Julius Hawkins, Sgt. Robert L. Wood and Sgt. John Cervellone. 1st Sgt. Frank J. McGuire distinguished himself in the ground action in reinforcement of the infantry patrol. The battery was commanded brilliantly by Capt. Simon J. Stevens and 1st Lieut. Paul G. McCoy, who was wounded while leading his men in the heat of this action.

Battery C supported two companies of the Netherlands Detachment with the 38th RCT. The "flying Dutchmen" expressed gratitude at the support received from the battery.

B Battery supported the 23rd RCT in February and saw considerable action, as indicated by the following entries in the battery diary for one night:

"132331 February: One M16 and two M19's, covering the south approaches to regimental perimeter, engaged enemy advancing through the RR trestle. Main attack repulsed. 300 rds 40MM, 1000 rds .50's expended.

"132245 February-140300 February: One M16 and one M19 engaged enemy attempting to cross under RR trestle and over river, on SE perimeter, 2nd-3rd Bn areas. Main attack repulsed. 300 rds 40MM, 1200 rds .50's expended.

"132300 February: One M16, under SA and MG fire, engaged enemy on Hill 248 attempting to over-run Hqs and C Batteries, 37th FA Bn from west. Attack repulsed. 1000 rds .50's expended.

"140245 Feb: One M16 engaged enemy infantry attacking 503rd FA Bn from NE. Enemy is close in when engaged. Attack repulsed. 7000 rds .50's expended.

"140230-140800 Feb: Three M19's and one M16 in continuous engagement

with the enemy from the southeast. 765 rds 40 MM and 3000 rds .50's expended."

During the three day attack by the Chinese Communist Forces, the non-combat vehicles of the battery also performed successful missions of ammunition re-supply and evacuation of the wounded. The battery itself suffered only five casualties, all wounded and only one severely.

The success of the defensive operations by elements of the 23rd RCT, against elements of an estimated four divisions of Chinese Communist forces "attacking relentlessly" and with "repeated efforts night and day," was praised by the X Corps Commander, Lt. General E. M. Almond, who recommended the 23rd Infantry and participating elements for the Presidential Citation, and by the 2nd Infantry Division Commander, Major General C. L. Ruffner.

THE third AAA AW Battalion under Lt. Col. Charles W. Stewart, organic with the 3rd Infantry Division, likewise was engaged in considerable action in close support of the UN infantry elements. The flanking fire delivered by elements of this battalion was especially effective on numerous occasions.

In one action a retreating enemy force of platoon size was intercepted by several antiaircraft artillery weapons and 90 per cent of the hostile party was killed or wounded. The friendly infantry and field artillery drove the enemy out of prepared positions and the anti-aircraft artillery, emplaced on a flank, caught the retiring enemy in its rapid fire bursts and accomplished exceptional results.

In an attack on Hill 88, three M16



Courtesy—Cpl. Gail Parkes
Lt. Col. Killilae daintily demonstrates the approved method.

and three M19 units supported the infantry from positions some 2000 yards from the hilltop. While another platoon of antiaircraft weapons effectively neutralized hostile mortar and machine gun fire coming from the other side of the Han River, the automatic units mentioned above kept the defending Chinese Communist infantry under fire and the friendly infantry took the hill with comparative ease and light losses.

Using overhead fire the 3rd AAA Battalion upon numerous other occasions shot out mortars and machine gun nests on information furnished from the infantry. A system of mil scale elevation and azimuth setting has been developed by the battalion battery units which is functioning most successfully.

On still another occasion two AA sections from Battery A, in support of the 15th Infantry, caught the enemy being driven out of position by friendly troops and killed or wounded 175 of them.

THE 15th AAA AW Bn (SP) lost the services of Colonel Robert W. Hain, who had brought the battalion from the United States and commanded it throughout its early Korean service, when he received his promotion to colonel and was transferred to Brig. Gen. Homer W. Kiefer's 7th Division Artillery. Major James N. Hickok assumed command.

Sections of Battery B, with the 3rd Battalion of the 48th Field Artillery on the march, hit a road block and killed nine enemy and destroyed two machine guns. At other times during this march two road blocks were encountered where heavy damage was inflicted upon the enemy. During the night an enemy attack was repulsed and thirteen of the enemy were found dead the next day.

On March 5th one M19 unit accompanying a task force of the 32nd Infantry Regiment knocked out one antitank gun and killed seventeen of the enemy. Near Kotogok on March 8th, antiaircraft elements of Battery B located an enemy group, dispersed it and killed eighty-two hostile troops. On March 10th, twenty-eight more of the enemy were accounted for by antiaircraft weapons fire from this battery. The only casualty in the battery was one man, who was shot in the hand but refused to leave his crew after receiving first aid treatment.

THE 21st AAA AW Bn (SP), Major Charles E. Henry, commanding, operating with the 25th Division, entered combat for the first time in support of the division's drive to the Han River. It took its first enemy toll, suffered its initial casualties and emerged as a confident and respected addition to the Korean antiaircraft troops.

Major Henry reports as follows:

"The Han River crossing provided a wonderful opportunity for our weapons to demonstrate their effectiveness. The broad sandy beach on the south bank of the Han made it possible to emplace three entire batteries in support of the infantry action in the crossing. There was no cover available, however, which made it necessary for our troops to emplace their weapons in darkness the

night before the crossing.

"A combined field artillery and anti-aircraft artillery barrage just before dawn covered every sector of the hostile shore defense. The barrage was lifted at daybreak with the infantry embarking in assault boats. Our quad caliber .50 weapons covered the amphibious advance of our troops and as our infantry flushed the enemy from his strong points the antiaircraft weapons picked them off from their flank positions. As soon as ferries and bridges were stretched across the river, our M16 units joined the tanks in pursuing the hostile troops, then retreating at top speed."

During the period March 7 to 10 the record shows:

641 enemy certified killed;
1077 additional estimated killed or wounded;
7 prisoners of war;
3 friendly wounded in action.

This performance again demonstrates the effectiveness of the quad caliber .50 machine gun in river action. Its fast rate of fire and extremely effective fire power make it outstanding for this purpose.

Brig. Gen. George B. Barth, Commanding General of the 25th Division Artillery, urged the consideration of improvised armor to protect the exposed gunners on the 21st AAA AW antiaircraft mobile units. An experimental shield has been developed for the turret of one of the M16's. Protective helmets have been issued to the driver and assistant in the cab of the half track because it has been demonstrated that these men are unable to clear the vehicle when it is overturned. The use of "flak suits" by crewmen is being considered.

Silver Star Award

COLONEL WILLIAM H. HENNIG, Arty, 10th AAA Group, distinguished himself by outstanding gallantry in action against the enemy near Unsan, Korea, between 25 October 1950 and 2 November 1950. During this period, the 10th AAA Group and attached artillery battalions were deployed around Unsan with the mission of supporting the 1st Republic of Korea Infantry Division, which held an advanced salient to the north of Unsan. On the afternoon of 25 October 1950 this division made its initial contact with the Chinese Communist forces which immediately launched strong enveloping attacks. A night disengagement and withdrawal was under consideration by elements of the division when Colonel Hennig's decision to hold all elements of his command in their exposed positions, and the effectiveness of the defensive fires which he personally directed, assisted the supported units in determining to hold their positions and thus avoid the hazards incident to a night withdrawal under enemy attack. During the entire period the enemy aggressively pressed his attack both day and night, but Colonel Hennig's cool, skillful handling of his units' fires held the numerically superior enemy in check until the night of 1-2 November 1950 when the division was attacked by overwhelming numbers of the enemy. Colonel Hennig maintained his command post in Unsan and continued directing defensive fires and coordinating displacement of his units in such a way that an orderly withdrawal, with minimum loss of personnel and equipment, was effected while continuing to inflict maximum destruction on the enemy. Colonel Hennig only withdrew his command post from Unsan after all his units had withdrawn to more tenable positions and the command post itself was under enemy fire and threatened with encirclement. Colonel Hennig's persistence, cool courage, and professional skill under extremely hazardous and difficult conditions are in the highest traditions of and reflect utmost credit upon the military service of the United States. Entered the military service from New Jersey.

* * * * *
Colonel Hennig was also awarded the Legion of Merit and the Oak-Leaf Cluster to the Legion of Merit for exceptionally meritorious performance of outstanding service covering two separate occasions.

LIEUT. Col. Roy A. Tate brought Headquarters and Headquarters Battery 52nd AAA AW Bn (SP) to Korea from the United States and was immediately attached to the 24th Infantry Division, where two firing batteries were attached to the battalion: Battery A, 26th AAA AW Bn (SP), which has been with the 24th Infantry Division since last July, and Battery A, 21st AAA AW Bn (SP).

Colonel Tate reports that his batteries have been employed in the protection of the field artillery units. Elsewhere in this JOURNAL he presents his viewpoints on the employment of the SP battalion.

Whether you accept all of his views or not, they are worthy of study as reflecting the views of an experienced commander who is now confronted with the situation in Korea.

Most certainly some changes are indicated in design, tactics and organization as a result of lessons learned in the Korean war. They should all be considered carefully and should be based upon the consensus of all the commanders who have been in the action. It is assumed that General Mark Clark's Army Field Forces are prepared to perform such analytical research. As a matter of fact, several groups of specialists already have examined certain phases of the Korean campaigns and have indicated some positive and extremely applicable reactions. To the troops the vital problem of the moment is to use the equipment now available in the organization now authorized to the greatest possible combat advantage.

Capt. Roger W. Miller, commanding Battery A, 92nd AAA AW Bn (SP) with the 1st Cavalry Division (Inf.), and Capt. Blaine B. Young of the 187th Airborne RCT report that their units are actively in support of the infantry and artillery, with plenty of special missions, lots of headaches and the usual splendid performance that has characterized their operations throughout the Korean campaign. These two units have done well and much credit is due to the commanders who carry responsibilities far beyond their actual rank.

NOW we come to the 10th AAA Group, commanded by Col. W. H. Henning, whose troops form the Korean Air Defense Antiaircraft Command. His elements are scattered far and wide and it keeps him and his staff on the go most of the time. General Devine spent considerable time with the 10th Group outfit and reports extreme satisfaction with the general combat efficiency and morale of the various units.

Since the enemy has not appeared within the air defense areas, the 10th Group has found it necessary to establish firing ranges where target practices can be held and the crews may be kept at the peak of efficiency. An antiaircraft gun crew has to get in a reasonable amount of shooting to keep on edge. If it cannot accomplish this at live targets, it must have a chance to fire at robot



Acme Photo

Cpl. Eugene C. Thomas carries the same colors from World War II in Europe to the Korean front with the 21st AAA AW Bn. (SP).

targets. During the month of March all organizations of the 10th AAA Group fired target practices. With the reported buildup of the hostile air forces it cannot be overemphasized that the alertness of the 10th Group units to the need for constant readiness is a matter of extreme importance.

The 78th AAA Gun Battalion, under command of the veteran Lieut. Col. Thomas W. Ackert, has shifted positions numerous times but always comes up with ideal air defense antiaircraft installations. The batteries all are on constant alert and awaiting the attacks that are daily expected. Target practices have helped in solving the morale problem and although in combat readiness at all times, considerable training activity is being conducted.

In order to contribute the utmost to the effort of winning the war the battalion performed an outstanding feat of convoy performance when a 51 truck column, assembled by Capt. Howard W. Pierson of Huntington, Ore., and commanded by Lieut. Norman F. Bradshaw of Fort Worth, Texas, made an 800-mile five-day trip with a full load of ammunition one way and a full load of wounded the other without incident. The trip was through hazardous mountain passes and over terrain infested with guerrillas. In the five days march the drivers had only three hours sleep. Lieut. Jack Hayne of Mountain Dale, New York, was assistant commander. Two mechanics, PFC's Black and Webb, worked incessantly throughout the trip and drew the praises of all officers and men for the prompt manner in which they handled temporary emergencies and kept the vehicles rolling with minimum de-

lays. Only one vehicle was lost during the trip. Motor mechanics are unsung heroes in war, and yet this story indicates the true importance of their presence in the fighting forces.

THE 68th AAA Gun Battalion likewise is commanded by a veteran of the Korean War, Lieut. Col. Raymond C. Cheal. He claims that his latest installations are close to ideal for combat antiaircraft defense and he has requested that a pictorial history of their present installations be made. Arrangements have been initiated to record the setup which, for various practical reasons, is difficult to duplicate in times of peace.

Some of the personnel of this battalion were among the first antiaircraft troops to be granted R & R privileges. They reported that they were delighted to return to their organizations notwithstanding that they enjoyed the brief respite in Japan.

The 76th AAA AW Bn (SP), assigned to the 10th AAA Group, commanded by Lieut. Col. Troy A. Barker, is emplaced and ready but in the absence of air targets or guerrilla ground attack also has been keeping on edge with target practices. The battalion has been subjected to a rigorous ordnance overhaul and inspection by teams of the 78th Ordnance Battalion. The 10th Group Commander has commended this battalion for its outstanding standards of ordnance maintenance. Lieut. Col. Barker gives a large portion of the credit to Capt. Neil B. Dunson and 1st Lieut. Wilbur A. Rawlins, both transportation specialists.

Chaplain Beverly M. Ward is one of the busiest officers in the organization with his religious, welfare and athletic activities.

The 50th AAA AW Bn (SP), commanded by Lieut. Col. Lawrence Lesperance who relieved Lieut. Col. C. S. O'Malley when he was assigned to an infantry division headquarters, has become firmly established in antiaircraft air defense roles since being released from the X Corps where it participated in intensive ground action in the Hamhung and Hungnam areas. The battalion is still chafing at the bit for action and is ready for all eventualities.

Battery A, 933rd AAA AW Bn (M), one of the separate batteries that have been in the Korean theater since early in

the campaigns, is commanded by Capt. Joseph A. Harris, Battery D, 865th AAA AW Bn (SP), commanded by Capt. George W. Eisemann, also is a veteran outfit. Both of these organizations have been attached to the 68th AAA Gun Battalion for administration.

SO, as time passes in the Korean battle zone, the antiaircraft artillery continues to become firmly entrenched in the military picture. Each phase of the action reveals new evidence of the utility and effectiveness of the antiaircraft weapons and organizations. The units in action continue to display heroism in almost every engagement and many decorations have been awarded since the last report to the *ANTIAIRCRAFT JOURNAL*. It must be realized that the names printed comprise only a partial list since recognition of outstanding service in the face of the enemy continuously is being accorded to these fine soldiers and offi-

cers. They are making history and they are doing it in outstanding style.

Lieut. General Edward M. Almond, brilliant commander of the X Corps during the Inchon landing and the Hungnam evacuation, is utilizing the antiaircraft units in patrol action according to a standard procedure.

"Our patrols habitually contain a platoon of infantry, six tanks and two flak wagons," the general said. "There is a lot of fire power there."

A firm indication of the effectiveness of antiaircraft artillery units in ground support action is revealed in sentiment generating in the forward area infantry organizations for the provision of additional batteries of ack-ack for all-around support missions exclusive of antiaircraft. Some commanders state: "If we had enemy air these antiaircraft outfits would become even more useful. However, we will continue to need this special type of support even when they are fully engaged in antiaircraft mis-

sions, so let's have separate units assigned specifically to ground firing." At present it is only an idea but it conveys a full appreciation of values.

Time marches on. A new phase is opening in Korea, the political and military hot spot of the world today. It would be difficult to predict what lies ahead, but these things are certain:

The weather is going to be a major irritant in the immediate future and extending through the wet season.

The United Nations troops are going to be "in there" fighting any and all Communist backed military forces that appear, with the ground troops continuing their magnificent efforts on land, the Air Forces their brilliant exploits in the air and the Naval Forces performing tactical miracles on the sea and along the shore lines.

And in the middle of it all will be the antiaircraft artillery taking it and dishing it out in traditional exemplary fashion.



NEW CHIEF FOR JUSMAG IN GREECE



Major General Robert T. Frederick was recently assigned as the Chief of the Joint U. S. Military Aid Group, Greece.

General Frederick graduated from USMA in 1928 and was commissioned in the CAC. In 1942 he organized the First Special Services Force and com-

mended that force in operations in the Aleutians in June, 1943. Leading the Force to Italy in November, he participated in mountain operations, the Anzio Beachhead, and in the liberation of Rome.

In July, 1944, General Frederick organized and commanded the 1st Airborne Task Force in the invasion of Southern France. In December he took command of the 45th Infantry Division and led that division until the war was over in Europe.

Since the war he has served as the Commandant, the Coast Artillery School, Chief of the Army Division, Air University, and as Commanding General, United States troops in Vienna, Austria. In 1949 he assumed command of the 4th Infantry Division at Fort Ord, his last station.

Decorations: DSC (OLC), DSM (OLC), LM (OLC), SS, BSM (OLC), PH (7 OLC).

Streamlining 90MM AAA For FA Roles

By Major Walter T. Ride, Arty.

THE value and effectiveness of 90mm AA guns in ground support missions has been demonstrated well by the 10th AAA Group in Korea. The 78th AAA Gun Battalion (90mm) alone fired some 24,000 rounds at ground targets, achieving results which speak for themselves. The purpose of this article, however, is to recommend a more appropriate "back-field formation" which should eliminate some of the difficulties encountered and facilitate operation.

Briefly, it is proposed to shift personnel and equipment by T/O&E cells so as to pattern the converted battalion after a FA battalion, thus taking advantage of the many decades of FA experience, developed techniques, et al. This shift could be made in a matter of hours, according to a prearranged plan along the following lines:

Headquarters and headquarters battery: Convert the headquarters radar personnel to a battalion survey section. Detach the battalion supply, maintenance, personnel, and ammunition sections to D battery. Add liaison officers, communication section, and two M55 sections from D battery.

A, B, and C batteries: Form operations sections from range platoon personnel. B and C batteries add one 90mm gun, complete with crew. A battery add two 90mm guns with crews, all from D.

D battery: D battery will be the "service battery." The battery commander should assume the additional duties of battalion ammunition and gun maintenance officer. The battery would be staffed with the battalion S4, MTO, asst S4, personnel officer, and battery unit administrator. By adding the battalion supply, ammunition, maintenance, and personnel sections the battery would be able to carry out normal FA service battery functions.

Medical detachment: No change.

SRMU: Attached to storage detail.

Storage detail: To be established upon conversion to the FA mission. The personnel and matériel of the detail should be stationed in a rear area, near

transport facilities. It should be officered by the battalion radar officer assisted by the SRMU commander. Enlisted manpower would be made up of the five battery radar repairmen, five battery CRO's, five battery generator operators, four battery director chiefs, two cooks from D battery, one mechanic from D battery, and three SRMU technicians.

Following is the personnel and major matériel breakdown by units:

PRESENT STATUS T/O&E 44-15

Hq. Btry.	A	B	C	D	Med. Det.	SRMU
Officers	13	4	4	4	2	0
WO's	3	1	1	1	0	1
EM	123	158	158	158	12	3
1/4 ton trucks	7	3	3	3	1	0
3/4 ton trucks	6	3	3	3	1	1
2 1/2 ton trucks	20	12	12	12	1	1
90mm guns	0	4	4	4	0	0
M55's	0	4	4	4	0	0

CONVERTED T/O&E 44-15 (comparative 105mm FA Bn. in parentheses)

Hq.	D(Sv.)	A	B	C	Med.	SRMU	Store D
Officers	13(15)	3(3)	4(6)	4(6)	2	0	1
WO's	1(1)	3(1)	1(1)	1(1)	0	1	0
EM	97(135)	118(85)	182(133)	168(133)	12	3	22
1/4 ton trucks	7(12)	3(2)	3(5)	3(5)	1	0	0
3/4 ton trucks	7(11)	2(3)	3(5)	3(5)	1	1	0
2 1/2 ton trucks	11(6)	19(19)	12(12)	12(12)	1	1	2
90mm guns	0(0)	0(0)	6(6)	5(6)	0	0	0
M55's	2(0)	2(0)	4(0)	4(0)	0	0	0

All parts of the above conversion should be as simple to execute as possible. No T/O&E cells should be split. In other words, if the communication section of D battery were to go to headquarters battery, all of that section's personnel and equipment would be included in the change. This would also help maintain good supply discipline as well as simplify reconversion to AAA.

Naturally, conversion to a ground role would present some problems in personnel training, but these training problems should be kept as simple as possible. Basically the field artillery has only four sections operating differently from ours; survey, operations, communica-

tions, and liaison. An extensive training of the personnel for these sections, by T/O cell, would simplify the preparation of an AAA battalion for a ground mission.

A light aviation section is a necessity for all FA battalions and should be added when the 90's assume the ground role. All communications would be greatly improved by the replacement of the AN/GRC-9's with SCR 608's and the

addition of five wire reels (RL 31).

This proposal is designed to overcome the actual problems and difficulties that we experienced in Korea. Those difficulties applied particularly to resupply, maintenance and communications.

The future commitment of AAA gun battalions to the field artillery role seems certain. This proposal is submitted as a flexible means to meet the challenge of readiness.

Colonel William H. Hennig, C.O. 10th AAA Group, in concurring comments "it should facilitate control and mobility without sacrificing fire power and greatly simplify communication and logistical problems."—Ed.

ACK-ACK ON THE NAKTONG

By Lt. Col. Raymond C. Cheal

THE long deadly snouts of the 68th AAA Gun Battalion's 90's still pointed toward the Red positions west of the Naktong. Spitting high explosive they had just sent a number of Kim Il Sung's followers to the Communist Valhalla, while supporting the British Commonwealth Brigade in its clearing of bypassed areas.

The gun crews of Dog Battery were enjoying a much deserved break when the ever familiar "March Order" rang out. In ordered confusion guns were placed in traveling position, limbered, and the Battery was on the way to its new mission. The 2d Battalion, 7th Cavalry having been in constant combat for weeks had been placed in what was supposed to have been a quiet rest area southwest of Taegu to protect the flank from any enemy infiltration into that strategic center. As all Divisional Artillery was with the main body of the Division smashing northwest toward Seoul, Major Caldwell, the CO of the 2d Battalion, 7th Cavalry, had no artillery support. The North Korean forces on the west bank of the Naktong soon discovered this and had a field day running their tanks and self-propelled guns up to the river's edge and throwing high explosive shells into the Cavalry positions without retaliation. The quiet rest sector of the Cavalry, as a result, became quite the opposite. Major Caldwell's pleas for artillery support were answered by the I Corps commander who directed that a battery from the 68th AAA Gun Battalion be sent to his assistance.

Captain R. G. Fazakerley, CO of Battery D, moved the battery and emplaced it on the night of 26 September 1950 in a Korean school yard. Captain Cassidy of the 1st Cavalry Divarty, with Captain Tomlinson and Lieutenant Duggan of the 68th acted as forward observers for the battery. Captain Fazakerley with Master Sergeant Cerqua, Range Platoon Sergeant and Sergeant First Class J. J. Murphy, Radar Section Lead-

er of Battery D, operated the FDC. The Battery was registered the following morning at 0915 on a suspected enemy position.

At 0942 on the 27th an enemy tank was spotted and taken under fire. The tank was destroyed and an undetermined number of enemy soldiers were killed and wounded. From 1147 to 1217 another enemy tank and artillery piece were taken under fire and destroyed. Needless to say the Cavalrymen were overjoyed to see the enemy tanks and guns which had been harassing them get a dose of their own medicine. The NOKs themselves were dumfounded as they had not expected any artillery fire. That afternoon at 1345, the battery fired a concentration on an enemy village and dispersed a battalion of enemy troops, causing many casualties. At 1400 another tank was observed and taken under fire. This tank was also destroyed and more enemy were killed and wounded. At 1600 another tank was observed and taken under fire. This tank broke battery D's perfect record of tanks destroyed as it was able to limp back and hide after it had been damaged. At 1700 another artillery piece was observed and destroyed and at 1800 an enemy truck loaded with soldiers was struck with a direct hit, demolishing the truck and killing or wounding about twenty Communist soldiers. All of Battery D's claims of tanks knocked out, artillery pieces destroyed, and enemy killed or wounded were verified either by forward observers or later by friendly patrols.

The following day, September 28, was singularly devoid of targets of opportunity. The Reds had developed a healthy respect for the lethal abilities of the 90's and were not about to risk their fast dwindling supply of tanks and weapons to the deadly accuracy of the ack ack gunners. One of the enemy tanks knocked out of action was engaged at a range of 6,000 yards with both HE and AP ammunition. All land and artillery pieces fired on were between 4,000

and 6,000 yards range. Harassing and interdiction fire of the 28th September was at ranges from 6,000 to 12,000 yards and placed on villages where friendly patrols reported that the enemy gathered during the daytime to forage and regroup, and on main supply routes and road junctions where the enemy had been observed moving tanks, artillery, troops, and supplies. Tanks were engaged with AP and HE ammunition. The Battery Commander maintained close liaison with the S2 of the Cavalry Battalion. The targets fired on during 28 September were interdiction and harassing missions without observed results. Friendly patrols later brought back reports of approximately fifty enemy dead.

THE enemy artillery now being driven back, both the Cavalry and British, who were operating in the same area, stepped up their patrol activities. As a result, the guns could not fire for fear of hitting friendly patrols. Captain Tomlinson, Lieutenant Mitchell, Lieutenant Ritz, and Lieutenant Duggan with two patrols of about 20 men accompanied by Cavalry personnel crossed the river in an assault boat powered by Lieutenant Mitchell's personal outboard motor which for some reason known only to himself he had brought to Korea. This outboard was used several times to power the assault boat used by the Cavalry to ferry its patrols across the river. These patrols visited the scenes of where the battery had fired and saw the devastating results of 90mm fire. Notable among the enlisted personnel who just had to go were Sgt. Richard Bowman, Communications Section Chief, and SFC Vernon D. Case, Mess Steward, who personally captured two NOK soldiers. Twenty-five NOK soldiers were brought back to the south side of the Naktong and turned over to the South Korean Police for necessary investigation and disposition.

On 1 October Major Caldwell's bat-

talion was pulled out of position and sent North to rejoin the rest of his regiment. Before departing he took the occasion to express his appreciation of the support rendered by Battery D. The high rate of fire, the accuracy, and lack of warning of the high velocity 90mm shell coming in were in large part re-

sponsible for the spectacular results obtained by D Battery in their greatest single day. The terrain in this one instance was almost perfect for the employment of 90s in a ground support role. The guns were in sight defilade and the area was quite flat with good observation.

In summary, Battery D fired over

600 rounds in a two-day period. It knocked out three enemy tanks, three artillery pieces, one truck, and damaged another tank. In addition, an estimated 100-150 enemy were killed or wounded. Battery D in that action contributed materially to the good name of the "Automatic Artillery."

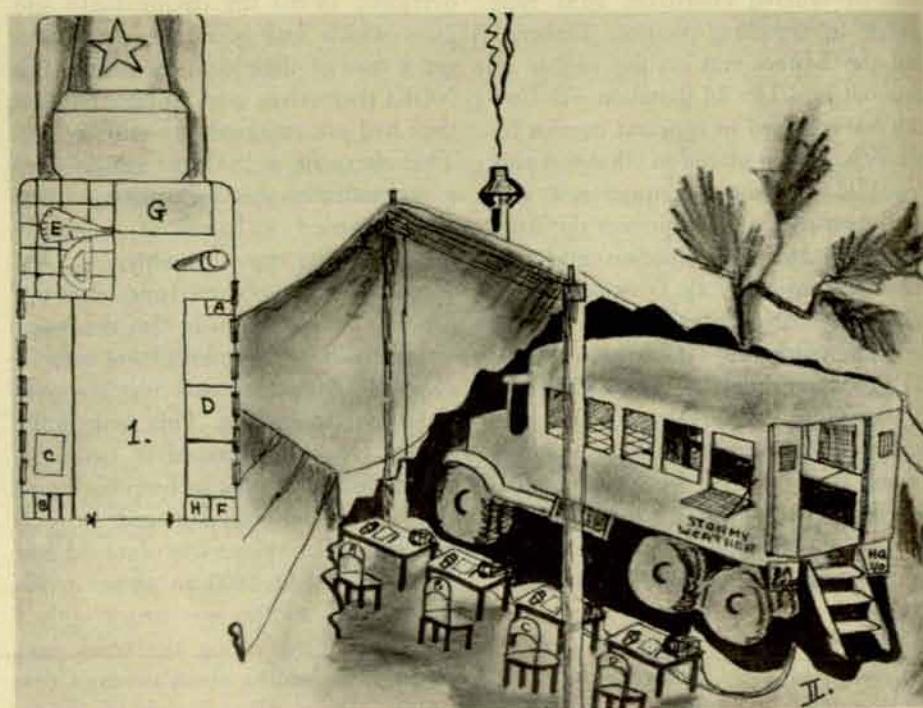


From AAOR To FDC—The Hard Way

By Major Harry Landsman

THE 68th AAA Gun Battalion arrived in Korea on 6 September 1950 with the mission of defending Pusan Harbor from high level bombing attack. However, the battalion commander, Lt. Col. Raymond C. Cheal, insisted that the battalion fire a field artillery practice. This was done on 13 September, 1950, with all officers taking turns as forward observers. This was the only field artillery firing the unit had done in over a year and a half. The same day that we fired this field artillery practice, 13 September, the unit received orders attaching it to the 1st Cavalry Division, with orders to move to Taegu immediately. Now the battalion was confronted with the problem of firing field artillery missions with personnel well trained in antiaircraft, but with almost no field artillery training. Fortunately the Unit Administrator of Headquarters Battery, WOJG Carl E. North, Jr., and the battalion master gunner, M SGT Salem F. Jones, had previous field artillery experience. They were assigned the task of training the fire direction center personnel.

Each line battery sent three range section men to Headquarters Battery to be attached for duty with the battalion FDC. These men were trained on live missions. The first mission was on 15 September 1950 when A and B Battery



LEGEND

- I. A & B: Telephones.
- C: Sheet data on Concentrations fired, Met Messages, and ammunition expenditures.
- D & E: VOC and HCO, respectively.
- F: Firing tables and manuals.
- G: Master Gunner set and equipment.
- H: Radio—SCR-593.

II. Tent covers the entire van. Cut-away shows the FDC set up for operation.

fired on an enemy crossroad. The next day, 16 September, D-day for the breakout of the Pusan Perimeter, the battalion fired 15 missions in ten minutes and received praise from the 1st Cavalry Divarty.

The FDC operated in the meteorological van. The met equipment had been left in Pusan with the rest of the Range equipment. This made an ideal FDC.

It also had the added advantage of being mobile. As illustrated, a large squad tent was put up over the van. The computers sat at field desks just below the open windows of the van. The HCO, VCO, and the S-3 had plenty of room to operate.

The computers soon learned their job well under the guidance of our two field artillery experts and soon went on to

Major Harry Landsman is the S3 of the 68th AAA Gun Battalion.

learn the HCO and VCO positions. This was accomplished with the knowledge that perhaps in the future one or more batteries might, due to the tactical employment of the battalion, be separated so much from the battalion FDC that the Battery would have to run its own FDC. Soon teams were formed wherein the S-3, S-2, ass't S-3, master gunner, and Mr. North could take over any position in the FDC. Further the computers, by constant on-the-job training, could take over as HCO's and VCO's. Subsequently this training paid off when on at least five occasions the Battalion was so emplaced tactically that individual batteries fired using their own FDC's.

Although the 68th AAA Gun Battalion had to learn field artillery the hard

way the unit soon proved it could hold its own with well-trained field artillery units and was called upon to fire its full share of missions. The battalion fired field artillery for the 1st Cavalry Division, the 27th British Brigade, the 24th Division and the 10th AAA.

The doctrine today requires the AAA gun battalions to maintain proficiency in field artillery firing. If this doctrine is to be made a fact and not just a theory, then some improvement can be effected. On the basis of combat experience it is recommended that:

1. AAA gun battalions in training devote adequate time to field artillery firing to maintain practical proficiency.

2. An air section of two liaison planes be assigned or attached to the battalion

when it is employed primarily in the ground role, as we were in Korea. Borrowing proved unsatisfactory.

3. The AN/GRC-9 and SCR-593 radios be replaced by the SCR-619 radio. When forward observers were sent out the AN/GRC-9 and the SCR-593 proved to be too bulky and definitely not the radio to be used by F.O.'s.

4. No deviation be allowed from current field artillery methods and commands. Many missions were fired with forward observers from various field artillery units and it was definitely proved that the same language must be spoken and understood by all.

5. When firing at extreme ranges fire for effect be opened when a 200-yard bracket is split rather than 100-yard bracket.



FIELD EXPEDIENTS

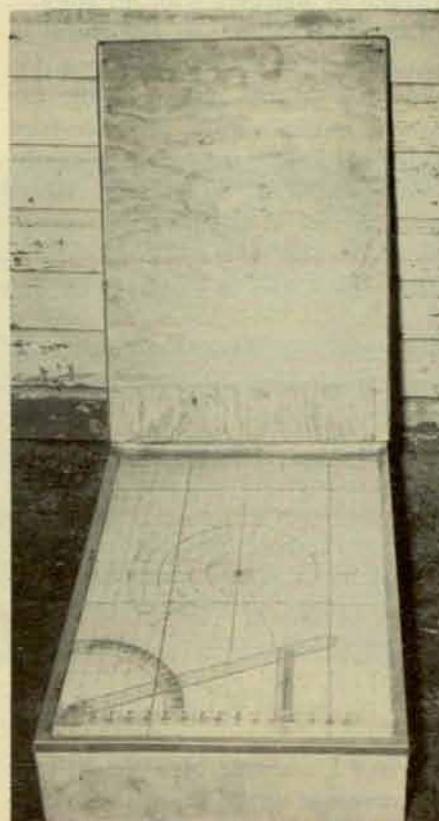
By Capt. William Y. Sinkovic, Arty.

THE combination plotting and altitude conversion board presently in use by the 71st AAA Gun Battalion, was designed for the use of battery commanders for recording and converting air intelligence plots into azimuth, slant range and angle elevation.

Of simple design, the board is constructed from materials available in any gun battalion. It consists of a box with a hinged top made of $\frac{3}{8}$ " plywood. The dimensions are approximately 20" x 30" with the top slanting from 8" at the back to 6" in front.

Under the hinged top are two pieces of plexiglass. On the top piece is a transposed blow-up of the radar plan position indicator, giving the battery commander an opportunity to plot accurate early warning data as it is received and to direct the long range search of his radar.

Conversion scales are inscribed at the lower end of the board. They include the elevation scale, graduated in mils, a movable arm graduated in thousands of yards for slant range pivoted at the cen-



ter of the elevation scale, and a movable altitude scale graduated in thousands of feet.

The altitude scale rides along the horizontal range scale which is graduated in thousands of yards.

Between the two pieces of plexiglass is a section of grid paper, showing the battery location at the center of the blow-up of the plan position indicator. This can be replaced when the battery moves to a new location.

Illumination of the board is provided by four 25-watt bulbs mounted inside the box. When not in use for plotting, the closed top forms a convenient desk.

The inside top cover may be used as a ready reference for status of equipment charts or other desired information.

While the lighting in the boards in use is satisfactory in eliminating shadows and makes for easy reading, it might be improved upon by fluorescent lights or a volume-control switch.

The Combination Plotting and Altitude Conversion Board.

LIEUTENANT MYER AND THE COMANCHE LANCE

By Jerome Kearful

ON a hill under the blazing New Mexico sun, the lone Comanche warrior sat motionless upon his equally motionless horse. From another hill, seated on his own mount, young Lieutenant Albert Myer of the United States Army noticed the Indian gazing steadfastly beyond the valley immediately in front where Comanche warriors were fighting furiously with Indians of another tribe.

Lieutenant Myer was fascinated by that contrast of savage fury expending itself in battle, and savage immobility represented by the lone Comanche watcher. He was undoubtedly some sort of outpost or guard; yet, it puzzled Myer to see that he kept his gaze fastened on a point beyond the valley where the fighting was going on, a point actually nearer to the fighting Comanches themselves than it was to their outpost.

Suddenly, as the young officer watched, the lone warrior on the hill seemed to come to life. Grasping his war lance, which had previously rested with one end on the ground, he raised himself still more erect on his mount. He held the lance about midway of its length, and raised it over his head. For a short moment he held it motionless. Then, with his forearm as an axis, he shifted it from position to position, from angle to angle.

When Myer looked down at the valley, he was surprised to see that the Comanches were breaking off the battle. Leaving the field of the contest, where they had seemed to be gaining an advantage, they were streaking away for the hills. When Myer looked up at the lone warrior, he saw that he had left his post and was riding to join them. The young Lieutenant of the Army Medical Corps was puzzled.

Then, through a pass opening into the valley, burst a horde of Indian warriors, fresh to the scene. They were ob-

viously reinforcements for the tribe that had been fighting the Comanches, and they would have turned the tide of battle had not their opponents already left the field.

WHEN the last of the Comanches and their pursuers had disappeared, Myer rode over to the hilltop where the single warrior had sat his mount. There he discovered what he half expected to find. From that point, he could see the defile through which the reinforcements for the opponents of the Comanches had arrived. It was obscured both to the valley and the other hill where Myer had been posted. There seemed to be no question but that the lone warrior had conveyed a message of warning by signaling with his lance.

Lieutenant Myer was thoughtful as he rode back to the command post. He could not get the picture of the Comanche warrior waving his lance from his mind. It haunted him persistently.

At twenty-four, Lieutenant Albert James Myer was serving as Assistant Surgeon in the United States Army, on duty in New Mexico Territory. He had already completed three years of medical practice during which, in addition to performing his doctor's duties, he spent much of his available time in the study of methods of communication. He had written a thesis called "A Sign Language for Deaf Mutes."

When Myer entered the Army, there was no Signal Corps. Commanders relied on written communications or the newly invented telegraph. Military units actually in sight of one another possessed no method of communicating by signal.

When Lieutenant Myer reached his assignment in the broad expanses of the West, his study of communication meth-

ods forcibly impressed upon him this lack of a ready means by which sentries and outposts could transmit important information to their bases. He felt sure that there should be some solution to the difficulty, and he puzzled over the problem.

Then there occurred that incident of the Comanche and his war lance that Myer had witnessed from the hilltop. The more Myer thought about it, the more he became convinced that here was the germ of an idea that could revolutionize military communication. True, you could not expect United States soldiers to carry war lances for signalling. But they could carry—and why not?—flags! And at night, they could use torches! Lieutenant Myer immediately began to devise a system of signalling using flags and torches.

THUS the idea took possession of Albert James Myer that he never relinquished until his death. Ridiculed and derided, he persisted in his efforts until he won the grudging support of Congress during the trying times of the Civil War. He was named First Signal Officer of the United States Army—after the Confederates had already put his system into effective use!

But his difficulties were not over. Jealousies and intrigues banished him to a remote and unimportant post. Never wavering, he worked harder than ever on his systems of signalling—for the Army, the Navy, and a United States Weather Bureau. In 1867, he was reinstated as Chief Signal Officer. Before his death, in 1880, he was honored throughout the world for his accomplishments in the arts of communication.

A Comanche Indian and his lance in New Mexico had unknowingly played an important part in his work!

40th Division AAA Arrives In Japan

By Lieut. Col. Thomas M. Metz
G3 Section, FEC

THE 140th AAA AW Battalion (SP) arrived in Yokohama aboard the USNS *General Nelson W. Walker*, in April, as the vanguard of the 40th Division, and as the first National Guard AAA unit to arrive overseas since World War II.

On hand to greet the guardsmen was Colonel Riley E. McGarraugh, Executive of the AAA Section, Far East Command.

The battalion is commanded by Lieutenant Colonel Kermit R. Schweidel, who graduated from USMA in 1935 and has served in the Army since that time.

This unit also has the honor of being the first National Guard AW Battalion to be sent overseas prior to World War II when, as the 2d battalion of the 251st Coast Artillery (AA), it debarked in Honolulu on November 5, 1940.

As a part of Colonel John H. Sherman's 251st CA(AA) the battalion served in Hawaii, the Fiji Islands, and on Guadalcanal. Later, as the 951st AAA AW Battalion it participated in the Luzon campaign until it was deactivated on December 10, 1945.



Troops of the first National Guard AAA Unit to arrive in Japan.

With the reactivation of the California National Guard following World War II, the 140th Battalion, formerly the 951st AAA AW Bn., was formed with Headquarters Battery, Battery A and Battery B from San Diego, Battery C from Vista and Battery D from Escondido. With the reorganization of the Na-

tional Guard Divisions in 1948-49, the 140th Battalion was assigned as the AAA Battalion of the 40th Infantry Division.

Federalized on 1 September 1950, the 40th Division was ordered to Camp Cooke where it underwent intensive training. The 140th Battalion was engaged in AA firing at Camp Irwin, California, when Major General Daniel H. Hudelson, CG, 40th Infantry Division, ordered the unit to return to Camp Cooke and prepare for its overseas movement to Japan. The unit received special commendation for a superior job in preparing its equipment for shipment to Japan.

The advance party composed of Captain Kenneth Barager, son of Colonel Kenneth M. Barager of Camp Stewart, Georgia, and CWO Roy F. Comford preceded the battalion to Japan by air and arranged for its reception.

The 140th Battalion moved to its training area to renew its intensive training program under the supervision of Colonel Julius Slack, Division Artillery Commander of the 40th Division.



Col. Riley E. McGarraugh greets Lt. Col. Kermit R. Schweidel and the 140th AAA AW Bn. Staff.



THE AAA AW BATTALION (SP)

By Lieut. Col. Roy A. Tate

DURING the years since the end of World War II much has been said and written about the use of AAA weapons for purposes other than antiaircraft. In fact, the mission of the AAA has been changed so that now our mission is not primarily antiaircraft; instead, it is directed equally against both air and surface targets. Along with this change in concept, and possibly one of the causes for it, there has been the program of "selling" the AAA to the Army as a useful all purpose organization and weapon.

This is as it should be. In war, versatility is a definite asset. The AAA weapon should be as universal as possible without seriously sacrificing its original purpose. And so should the organization which handles the weapon. This concept, which was actually tried by units in the field during World War II, has particular bearing on the AAA AW Battalion (SP), as it will continuously find itself in the position of trying to fulfill the provisions of the concept. However, the weapon design, the unit organization, and the principles of tactical employment for the SP battalion have not kept abreast with these new concepts.

In making our sales talk to the division commander, who now has an SP battalion organic in his command, we have left out some of the important facts on the debit side of the ledger. Logistically the SP battalion is very expensive. It requires as much gasoline to move the battalion as it does to move all the remaining elements of division artillery. It requires as much gasoline to operate the battalion in a static position as it does to operate the remaining elements of division artillery. The equipment of the battalion is about equal in weight to that of the total of the three 105mm howitzer battalions.

I do not know to what extent the Armed Forces have fully considered the logistical cost in dollars of various elements and pieces of equipment when drawing up the requirements of major units. In the next all-out war, however, this may become the most important

factor, when it is considered that the dollar cost of a piece of equipment actually represents a criterion in man-hours, raw materials, and production capacity. We will probably reach the limit of these factors before the needs of the Armed Forces are satisfied. The SP weapon is also very expensive from a dollar point of view. When considering the weapon and organization in this light, the unit should be capable of inflicting the most damage or providing the most protection with the least dollar and logistic cost.

ANOTHER factor which the division commander will consider is the fact that when the division takes the offensive he may expect to have at least local air superiority. This would indicate that if the net worth of the battalion is to be a positive figure, it must be capable of carrying its load of the above expense by ground support roles alone when the enemy air force is not operating.

Can the SP battalion do this, as it is now equipped, organized and trained? In Korea, yes; but could it do so against the enemy we faced in Italy, Normandy,

Germany, or Okinawa? In my opinion there are some deficiencies which require correction before a firmly positive answer can be made.

There are some defects in the design of the SP weapons which hamper their employment in the close support role. There is a question about the suitability of the organization of the SP battalion for this role. And in particular, there is a lack of accepted standard doctrine and procedures for the tactical employment of the battalion in close support.

Out of all the experiences of many SP battalions during World War II, one incident has been chosen and used most as an example as to how AAA AW weapons may be employed effectively in a ground support role. That incident involves a very unique case of firing at an enemy entrenched in caves in the side of a hill. In that incident the enemy evidently had no type of antitank or any other direct fire weapon except small arms. This example does not offer a solution to what might be considered more or less normal combat operations. Neither do many of the other unusual incidents which we hear cited. Many of these cases are actually incidents where



M16 of the 21st AAA AW Bn. (SP), with tanks, blasts enemy held hill North of Han River prior to infantry attack.

the local commander used a weapon that was on hand and which in a few cases may have been the best weapon for the job. In many cases one of the weapons of the infantry regimental team could have performed the job just as effectively, if the proper weapon had been on the spot. The action of the local commanders in each case was to use any means available to accomplish the mission, whether that means was designed to accomplish that particular mission or not.

Many infantry commanders, especially of the lower echelons, now have a lot of faith and confidence in the SP weapon as a close support weapon. They are the ones who have had an occasion to use the weapon effectively and have done so by some method worked out at a relatively low echelon level. Even now, every unit must go through the same development problems before something is agreed to, which is satisfactory to all arms concerned. This method of developing the tactical employment has been a logical step, and it is serving to provide valuable experimental information. However, it does often fail to achieve maximum efficiency on the battlefield and it does consume precious time and effort which could be saved by the development of standard doctrine.

RECENTLY in Korea the SP weapons have been used more exclusively than ever in the ground support role. Here we have a situation where the enemy is strong in manpower and weak in artillery, tanks, tank destroyers, or other weapons that would be effective against the SP weapons. The battle has been continually one of movement, and not position warfare. The SP weapons have been used habitually, effectively, and almost solely in the ground support role.

Whether in the advance, in position, or in withdrawal these weapons are actively employed at the point of contact with the enemy. They are used extensively in advance guards and rear guards. Some are usually found protecting the artillery whether in position or on the move. They are also used to support tank action. The M16 quad .50 and the M19 twin 40 mounts have been quite effective against enemy personnel.

Evidently within each division some degree of standardization in employment

Silver Star

CORPORAL STAFFORD D. SHIPLEY, Battery A, 15th AAA AW Bn. (SP), displayed gallantry in action against an armed enemy near Hoengsong, Korea, on 12 February 1951. Corporal Shipley was in charge of an M-16 multiple machine gun half track which was protecting a road intersection to permit the passage of the vehicles of a task force to Wonju, Korea. While his M-16 was engaged in firing at the enemy, Corporal Shipley heard a call for assistance from his section chief who had discovered eight seriously wounded soldiers in a burning house. Corporal Shipley毫不犹豫地 made his way to the house through intense enemy fire to assist in carrying the wounded men to a place of comparative safety, after which he helped to load them onto passing vehicles for evacuation. Corporal Shipley's gallant actions resulted in saving the lives of eight men and reflect great credit on himself and the military service. x x x Texas.

has been worked out. Between divisions the reports indicate a wide degree of variance.

While real progress is being achieved in the combat divisions, still the lack of standard tactical doctrine leaves some unacceptable conditions. In training or in initial combat the SP battalion commander and his subordinates are bewildered as to the proper tactical employment under a given set of combat conditions. Likewise, the division commander and his subordinates have to grope in the dark in formulating the plans for employing the battalion. Ineffective use or misuse of the SP weapons may be expected.

THE time has now come to take stock of our experiences with the antiaircraft self-propelled battalions and to crystallize our views on their mission, the requirements in weapons and unit organization, and the doctrine for tactical employment.

I am aware that this matter has the attention of the Chief of the Army Field Forces and of the AA and GM Branch of The Artillery School. I do wish to stress its importance and to emphasize that the solutions reached should be firmly influenced by officers from the Infantry, Armor, and Artillery with combat experience in the employment of the SP weapons.

The first task is to determine the mission of the battalion. Does the division require the AAA AW Battalion (SP) for the ground support role?

If not, then the SP battalion is far

too expensive to be carried in the luxury class as something which might be used occasionally in the support role. It would then be more logical to assign the AAA AW battalion (mobile) with towed weapons to the division. It has equal antiaircraft effectiveness, and is far more economical.

If the SP battalion is required and if the present mission is proper, then determinations should be made on:

- a. The requirements in the characteristics of the SP weapons.
- b. The battalion organization designed to fit the organization of the infantry division.
- c. Doctrine for the tactical employment of the battalion.

WEAPONS

Here are some suggestions on the characteristics of the SP weapons.

Field mobility and maneuverability are the most important factors governing the use of the SP weapon in ground support role, and are the ones which at present impose the greatest limitations. Actually, there are few positions from which the SP weapon can deliver effective fire. Experience in Europe proved that the approaches over which the weapon could advance to get into these positions were usually covered by enemy fire, and that approaches not covered by enemy fire or which offered cover or concealment were across terrain that could not be traversed by the vehicle. Also, the weapon must open effective fire the instant it arrives in position and move to cover or concealment as soon as sustained fire ceases. Failure to do so means almost certain destruction of the weapon as the weapon cannot withstand artillery or tank fire.

The weapon should be mounted on a full track vehicle with armor enough to protect all members of the crew from small arms and light shell fragments. It should have cross-country mobility, speed and maneuverability. A low silhouette is essential. The ground pressure should be much less than that of the M19 (9 plus pounds) for operations in soggy terrain. The sight should be graduated to indicate superelevation required for various ranges. Sight should be the speed ring reflex type with 600 MPH ring. The turret should be power operated, capable of being pointed and fired by one man, and should also have a

hand-operating mechanism with high or low speed drive. Weapon should have 360 degree field of fire at minus 10 degree elevation. Weapon should be capable of engaging an air target for one course with only one man on the weapon (the latest weapons can do this now). The M-45 turret and the 40mm gun are both good weapons. The deficiencies are in the vehicle mount, sights and methods of pointing.

ORGANIZATION

THE present SP battalion organization with four batteries, two platoons each, was adopted from standard antiaircraft organization. It does not appear to fit the requirements of the triangular division. In any event, the approved organization should provide essential antiaircraft protection for the most vulnerable elements of the division, and at the same time provide for each infantry regiment some SP weapon strength that can be used in either the antiaircraft or ground support role without withdrawing essential AAA protection from elsewhere. Obviously the battalion organization should be flexible to permit rapid shifts in strength; even so, if the close support of the RCT's is to be effective, some element of the SP battalion should serve with each RCT enough to maintain ready familiarity with its individual quirks and personalities. Major requirement considerations will include the artillery, the infantry regiments, and the

tank battalion. Lesser requirements will include division aviation, the division CP, and the division engineers in special operations.

We need to strengthen the headquarters battery to enable it to function both as a headquarters and as a service battery.

We also need to determine how many combat batteries are required for the division; how many platoons per battery; and how many sections and weapons per platoon.

TACTICAL EMPLOYMENT

In formulating doctrine for tactical employment the major task is to determine the methods of employing the SP units with the infantry RCT. In my opinion the SP unit should function as a part of the team, or in other words, as an added member of the infantry, artillery, tank team. It should be under the regimental commander and readily available to him without having to call on someone else. When the weapon is used in the close support role it will usually move into position, fire, and move again. When the combat team needs the weapon, it will often be on short notice where there is no time for a war plan or prolonged reconnaissance, or much occasion for, or advantage in digging in. Even when dug in the weapon cannot long remain within range of artillery after it has fired and disclosed its position. The weapon has only limited utility for indirect fire.

There is also the task of formulating tactical doctrine for the employment of the SP weapons with the tank battalion.

The tactical employment of the SP weapons with the artillery and divisional rear echelons has already been well worked out.

SUMMARY

Until our battalions began to develop procedures and establish doctrine on the battlefields in Korea, I believe that we had considered the SP battalion fundamentally as an antiaircraft unit and shaped it accordingly. As for the ground support role I think we were guilty of a bit of bluffing and wishful thinking. The time has now come to put the ground support role on a firmer basis.

It is submitted that:

The Infantry Division does require the AAA AW Battalion (SP) in the ground support role as well as for Antiaircraft.

The battalion should be geared to fit this mission by essential modifications in the weapons and organization.

The doctrine for tactical employment should be worked out in close coordination with the Infantry and other ground arms.

[The reader's attention is invited to FM 44-2, Antiaircraft Artillery Automatic Weapons, August, 1950. This document represents official effort in the direction recommended by the author.
—Ed.]

374th AAA GROUP NOW AN A UNIT



Col. Thomas F. Mullaney's 374th AAA Group of Chicago have attained Category A status as an ORC unit. Brig. Gen. Hugh M. Milton, II, Executive for Reserve & ROTC Affairs, congratulates Capt. George A. Patraitis on the appearance of his Hqs. Btry.

BAKER BATTERY IN THE ATTACK

By 1st Lt. Phillip H. Stevens

ON the 21st of February, 1951, the 32nd Regimental Combat Team of the Seventh Infantry Division jumped off as the spearhead of an all-out offensive on the Korean eastern front. As part of this combat team Battery B of the 15th AAA AW Battalion (SP) was in the thick of the fighting from the very start, commanded by 1st Lt. Clarence L. Guffey. As this article is written the offensive has come to a halt just short of the 38th parallel, and Baker Battery is swabbing out its gun bores and greasing its bogies to keep in readiness for anything the future may bring.

During this past operation the coordination between the infantry and the supporting antiaircraft units has reached its highest point of efficiency. For the first time the AA platoons were assigned to individual infantry battalions for periods of time that were long enough for both parties to become thoroughly acquainted. After a few days the infantry battalion staffs and the company officers had gained a solid knowledge of the capabilities and limitations of self-propelled antiaircraft weapons as they are used in a close ground support role. The AA platoon leaders, in turn, strengthened their knowledge of basic infantry tactics. After the first few days when the cry of "Hey, Ack-Ack!" went up, everyone from the battalion commander to the lowliest gold-barred platoon leader was sure that they could discuss their problems on a ground of common knowledge.

The second platoon of Battery B was the first one to see action in this offensive. This platoon, commanded by 1st Lt. Thomas A. Holt, went into action with the second battalion of the 32nd RCT. Their mission was to push north from Chechon and to mount an attack directed at the enemy stronghold of

Silver Star

CORPORAL ANTHONY F. CARFAGNO, Battery A, 15th AAA AW Bn. (Sp), displayed gallantry in action against an armed enemy near Hoengsong, Korea, on 12 February 1951. Corporal Carfagno was in charge of an M-16 multiple machine gun half track which was protecting a road intersection to permit the passage of the vehicles of a task force near Wonju, Korea. While his M-16 was engaged in firing at the enemy, Corporal Carfagno heard a call for assistance from his section chief who had discovered eight seriously wounded soldiers in a burning house. Corporal Carfagno unhesitatingly made his way to the house through intense enemy fire to assist in carrying the wounded men to a place of comparative safety, after which he helped to load them onto passing vehicles for evacuation. Corporal Carfagno's display of gallantry resulted in the possible saving of eight lives and reflects great credit on himself and the military service. x x x Pennsylvania.

Pyongchang. The attack shoved off on 21 February. Enemy resistance was sporadic, but determined. Each time the advancing infantry hit an enemy strongpoint, concentrated 40mm and caliber .50 fire coupled with the infantry's own fire power, succeeded in dislodging the enemy. Pyongchang was taken and the offensive rolled on.

On the twenty-third of February the first battalion of the 32nd moved through



M19 crew: Cpl. Thomas J. Williams, Sgt. Roy W. Reynolds, Cpls. Matthew Kuza, Thomas O. Gilchrist and Leo Brosart.

the 2nd battalion, to assume the spearhead of the attack. The first platoon of Battery B was still in the process of moving up, so Lt. Holt and the 2nd Platoon went ahead with the 1st Battalion. Their objective was a high mountain pass six miles north of Pyongchang. A large number of firmly entrenched enemy soldiers were ready and waiting to meet them.

While the infantry moved up the high ground on either side of the road a column of tanks and the flak wagons of the 2nd Platoon moved up the road with the battalion command group and an engineer antitank mine squad. About halfway up the pass the enemy opened up on the group on the road. The engineers who were out in front searching for mines were mowed down. The battalion command group was hit hard. The battalion commander, S3 and S2 were wounded along with the artillery liaison officers.

A section of antiaircraft vehicles commanded by SFC William E. Fisher was on the spot to relieve the pressure. The M19, commanded by Sgt. Roy Reynolds, and the M16 commanded by Cpl. Donald E. Standley unleashed their terrific fire power at point-blank range driving the ambushers back in confusion.

Shortly afterward Lt. Holt received word that a forward observer party was trapped and pinned down by small arms fire. He immediately led another AA section commanded by SFC John Sevilla into position to put covering fire down to allow the F.O. party to withdraw. This position was very much exposed. An antitank rifle round went through an ammunition chest of the M16 commanded by Sgt. Blair Young, but somehow missed all the crew members.

BY this time the column on the road had come to a narrow defile in the mountains. At this critical point a tank at the head of the column hit a mine and was disabled. The column was immediately

1st Lt. Phillip H. Stevens graduated in 1949 from the University of California. He is now serving on competitive tour with Battery B, 15th AAA AW Battalion (SP).

brought under fire from the ridges on top of the defile. The enemy on the ridges were dug in so that AA fire could not be brought to bear on them. SFC Fisher's section, caught in the middle of the defile, resorted to their carbines to drive off the attackers. During the time that their path of advance was blocked by the disabled tank, Sgt. Fisher's men fired 800 rounds of carbine ammunition. The M19 received numerous dents, nicks and scratches in its armor while the M16 was virtually showered with small arms fire. The covers of the ammunition ready boxes were pierced in several places, a flash hider on a 40mm tube was shattered, the sleeping bags of the crew were cut to shreds and the radio antenna was shot off its base. The number of men wounded? Zero! None! Some sort of protecting spirit was working fulltime for those boys that day!

At this point the 3rd Battalion of the regiment, supported by the 1st Platoon of Battery B, took over as the leading element of the offensive. Commanded by 1st Lt. Donald E. Harkins, the platoon moved about 200 yards further through the pass when they, too, came under heavy small arms fire. An AA section under the command of Sgt. Robert J. Holmes concentrated fire into the trees which concealed the enemy. The hail of lead put out by the M16 of Sgt. Bicuwa Laweka kept the enemy down in their holes. The M19 of Cpl. Pilar A. Hernandez killed the enemy in their holes by getting wicked tree bursts.

The objective for the next day was the town of Hadaehwa. The infantry moved up on the high ground on both sides of the road. Tanks and AA vehicles moved up the road. An M16 commanded by Sgt. Roy R. Lassila delivered effective covering fire for the infantry. Just short of the objective the 3rd ROK regiment passed through the U. S. troops. They had gone about 400 yards further up the road when two enemy machine guns opened up and pinned down the entire ROK regiment. For the first time Lt. Harkins was able to observe the enemy positions because tracer ammunition was being used. Lt. Harkins maneuvered an M19 into position and destroyed both enemy guns. The ROK troops then regrouped and advanced to capture Hadaehwa.

AFTER Hadaehwa was secure the

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PRIVATE FIRST CLASS ROGER C. FREDELL, Battery A, 15th AAA AW Bn. (SP), displayed gallantry in action against an armed enemy at Hoengsong, Korea, on 13 February 1951. Private Fredell was performing his duties as gunner on an M-16 multiple machine gun half track, which was protecting a crossroads to permit passage of vehicles of a withdrawing task force. During the night, the ammunition trailer of his M-16 was set on fire by enemy action. Private Fredell, despite heavy enemy fire, crawled onto the trailer to extinguish the blaze. Soon after his initial action, the trailer was struck by an enemy mortar shell which blew burning gasoline onto the M-16 tracks. Without regard for his own safety, Private Fredell braved intense enemy small arms, automatic weapons and mortar fire to extinguish the flames and in so doing was wounded by enemy fire. Saying nothing to his comrades about his wound, he resumed his post and kept the guns firing as the half track advanced on the enemy. Subsequently he was seriously wounded and evacuated to a position of safety. Private Fredell's gallantry reflects great credit on himself and the military service. x x x Illinois.

2nd battalion passed through the 3rd and continued forward. The 3rd battalion made its way to the left flank to secure particularly rugged hills that overlooked the route of advance for the whole regiment. On several occasions heavy fire from 1st Platoon vehicles pinned the enemy in their foxholes while the infantry went forward with fixed bayonets. A section under SFC James C. Oglesby did a particularly effective job in this role.

The 3rd battalion had a particularly difficult time with an unmarked knob called "Square Rock Hill." All routes of approach were exposed and the enemy would mow down anyone who came



2nd Platoon's M16: Standing, Sfc. William E. Fisher, Cpls. Donald E. Standley and William L. Broner. Kneeling, Cpl. Albert W. Marshall, Pfc. Ramon Garza and Joseph Kushner.

within range. By alternating vehicles and pouring in a continuous stream of fire the enemy were kept in their holes so the infantry could advance to engage the enemy in hand-to-hand combat. As the AA vehicles expended their ammunition, they were loaded with infantry wounded and returned to the rear. At the ammunition supply point they reloaded and returned to action. One M19 squad has been recommended for Bronze Star medals for evacuating wounded under hazardous conditions. The members of this squad are: SFC Carl F. Portwood, Sgt. Dallas B. Ours, Cpl. Richard M. Evans, Cpl. Marion Fleenor, Pfc. Kenneth E. Glausman, and Cpl. Horace C. Bauer.

In the final part of the 3rd battalion's phase of the operation, L Company was called upon to assault a heavily wooded hill. When observation became difficult as the troops moved through the woods, Lt. Harkins made his way to the company C.P., to better coordinate the fire of his platoon. As he was receiving his instructions the C.P. became the scene of a hand grenade battle. However, he managed to get his instructions and wasted no time taking his departure. The resulting improvement in fire direction made the job of taking the hill considerably easier. In fact the company commander credited the AA with the knockout punch that enabled his men to reach their objective.

ON the seventh of March the second platoon, now commanded by the writer, was assigned as part of a task force to determine the condition of roads that would be used in future operations of the regiment. The balance of the task force consisted of a tank platoon, an infantry company and a platoon of engineers. About halfway to the patrol objective the infantry ran into heavy enemy small arms fire. The enemy also had blown large craters in the road along the mountainside. The engineers, working under the covering fire of antiaircraft vehicles and tanks, had just completed road repairs when the task force was ordered to withdraw.

The following day a special task force of tanks and AA vehicles accompanied by an engineer mine detector squad was sent out to complete the unfinished patrol. At the point of the previous day's furthest penetration it was discovered

that the enemy had reblown the road craters during the night. In order to complete the assigned mission the tanks and M19's took to the rice paddies and went forward while the M16's were left behind to act as a rear guard and radio relay station.

About a mile from the patrol objective the column was brought under attack by enemy antitank rifles and 82mm mortars. The tank ahead of my command M19 was hit twice by antitank fire. Needless to say the people in the thin-skinned M-19's were really sweating the situation out. Fortunately, the anti-tank gun crew made the mistake of trying to change their position. I observed their movement and the M19 crew commanded by Sgt. O. W. Brown cut them down to size before they had moved five yards. A few minutes later a white phosphorus round from a tank drove about thirty enemy from a house. Sgt. Brown's alert crew opened fire instantly to demolish that group with a terrific concentration.

While this engagement was going on the rear guard M16's were brought under 60mm mortar fire by enemy troops entrenched in the surrounding mountains. By changing their positions frequently, they avoided being hit. The ground on which they were placed was liberally pockmarked by the small mortar craters.

The main body of the patrol continued forward. A patrolling mosquito plane dropped a message streamer warning that the surrounding hills were strongly defended by an enemy group of approximately battalion size. The tank crews immediately pulled their heads in and the silence was shattered by the clanging of many hatches being shut. The Ack-Ack crews had no way to button up, so they simply increased their watchfulness and fired at anything that looked remotely suspicious. This searching fire must have paid off because not another shot was fired by the enemy.

The patrol finally reached its objective, observed that the two critical bridges were demolished, and made a hasty withdrawal. Sporadic mortar fire was encountered on the return trip, but the withdrawal was accomplished without further mishap.

Silver Star

PRIVATE FIRST CLASS FREDERICK E. BARTON, Battery A, 15th AAA AW Bn. (SP), displayed gallantry in action near Hoengsong, Korea, on 13 February 1951. He was a gunner on an M-16 multiple machine gun half track, which was part of the rear guard covering the withdrawal of an infantry task force. During the night, the other gunner was wounded by the intense enemy fire directed at the weapon from both sides of the road. Disregarding his own personal safety, Private Barton exposed himself to the heavy enemy fire to assist in removing the wounded man from the turret. He then voluntarily assumed the tasks of both gunners for a period of over an hour to insure the continued firing of the guns. By his outstanding personal courage, Private Barton kept all four guns of his half track in action against the enemy and insured the success of the mission. Private Barton's gallantry reflects great credit on himself and the military service. x x x
New Hampshire.

THE following day one section of the Second Platoon supported E Company of the 2nd Battalion. The company objective was a high, rugged peak designated as Hill 978. An enemy group of company size was dug in there and appeared to be in a very stubborn mood. They had done an excellent job of shooting up U.N. patrols that were sent into the area.

This antiaircraft section was commanded by SFC William C. Brown with Sgt. David Faulkner and Sgt. William H. Kitchen as squad leaders on the M19 and M16. Sgt. Brown's section had complete visual and radio contact with E Company during the entire assault. This enabled him to shift his fire from one terrain feature to another, always keeping just ahead of the advancing infantry. M19 Gunner Cpl. Herman L. Cash did an excellent job of putting armor piercing and high explosive rounds into enemy held caves and pillboxes. E Company had two men killed and six wounded in the assault. The company commander, however, reported that the newly captured ground was littered with evidence of many enemy casualties. Again the enemy practice of carrying away their dead made it difficult to ascertain the true number of Communists killed in the action.

The biggest problem encountered by Battery B was the difficulty in coordina-

tion between the troops advancing on an objective and the supporting AA platoons. On ground that was clear of trees and easily observed by the supporting units the simple device of having the leading infantry elements carry an identification panel worked well. As long as the foot troops stay behind the panel effective fire can be delivered to strong points ahead of them.

ON occasions when the troops are advancing through wooded areas, or on the reverse side of slopes that cannot be observed by supporting weapons, the identification panel is of no value. In this case radio contact must be maintained. The SCR 300 radio works well for this purpose. The difficulty here involves the impossibility of identifying terrain features by conversation, especially when the terrain is being viewed from two different angles. Quite often the only answer for the AA platoon leader was to say, "I'll put two rounds of H.E. on the spot *I think* you mean, then you adjust from there." The infantry commander would then watch for the bursts and make the necessary adjustments. This system, obviously, is not the best one but it has served the purpose on many occasions and will pass until something better comes along.

One suggestion that would take care of the problem in wooded areas would be the use of pyrotechnics. As the infantry elements advanced in the woods they could discharge a flare occasionally to indicate their position and to signal for fire on the area just ahead of them. This system has not been tried due to the absence of suitable pyrotechnics.

Battery B has learned a great deal about the conduct of a role that was very new to them when they arrived in Korea last September. In the fighting around Suwon, immediately after the landing at Inchon, the battery had its first taste of ground support. They were shot at and fired back at the enemy for the first time. A seed of knowledge was planted there and the resulting growth has continued through the months. During the current operation it has borne fruit enough to make us all proud of our accomplishments.



THE M19 AS AN OFFENSIVE WEAPON

By Capt. H. D. McCallum, Arty.

If the World War II antiaircraft artillery officer suddenly found himself recalled to active duty and assigned to a self-propelled AAA unit in Korea, he would wonder where the term "antiaircraft" applied. He would also have to proceed to refresh his tactical concepts of ground deployment. To date, this battalion has not had an aerial target in over six months of continuous combat operations. Our positions are occupied with an eye to possible air attack, but our primary mission throughout has been ground support of infantry regiments, or perimeter defense of field artillery battalions.

Many lessons have been learned and experiences have been gained resulting from ground support roles; foremost among them is the conviction that the M19 (dual 40's mounted on light tank chassis) is one of the greatest offensive weapons currently in use by the U. S. Army. Its ability to maneuver over rough terrain and its devastating fire power have caused the enemy to respectfully refer to it as "Automatic Artillery."

Initially the infantry commanders were reluctant to utilize AAA weapons in attack plans. It seemed as though the designation AAA indicated that these strange weapons were to be confined to defensive operations only; however, through salesmanship on the part of the battalion C. O., Lt. Col. Charles W. Stewart, AAA units began to be included in offensive operations with such excellent results that today in the U. S. 3d Infantry Division there is just not enough to meet the daily operational demands.

The battalion daily operational reports contain hundreds of successful operations, mainly attributed to the fire power of M19's. The damage inflicted on the enemy continues to mount daily. At the present time this battery alone

Capt. McCallum commands Battery D, 3rd AAA Battalion (SP), in Korea.



M19 crew of Battery A, 1st Platoon 82nd AAA AW Bn. (SP). U.S. Army photo

is officially credited with: 511 enemy killed in action, seventy enemy wounded in action, two observation posts, nine machine guns, eight trucks, two boats, five mortars, two 20mm AA guns, two gas dumps, and three ammo dumps destroyed.

During the recent drive to the Han River, an M19 commanded by Sgt. Raymond Prebble had the distinction of being the northernmost allied unit in Korea. On 10 February 1951, a task force was formed consisting of an infantry tank company, an infantry rifle company, and one platoon of AAA. This task force raced through 25 miles of enemy territory to the Han River, where they deployed into a wagon-wheel defense and spent the night. The following day, orders were received to clear the intervening territory separating the task force and the foremost attack elements of the division. During the process of carrying out these orders, the enemy withdrew to prepared positions on the top of a high hill overlooking the Han River.

The tanks and AAA weapons took up firing positions on the road, back approximately 1,500 yards from this hill, and opened fire. Although the tank fire was highly effective and accurate, the

enemy had time to shift positions when spotted, due to the relatively slow rate of fire. When engaged by the M19's firing automatic, confusion was immediately apparent. In a period of less than sixty seconds, 762 rounds of 40mm raked the position area, killing 41 and wounding 17. The remainder of the force scampered to the reverse side of the hill where fighter planes caught them with machine guns, rockets, and

Silver Star

SERGEANT FLOYD A. MARKLE, Battery A, 3rd AAA AW Bn. (SP), 3rd Infantry Division, United States Army. On 10 February 1951, near Majukko-ri, Korea, two half-tracks were sent to rescue two squads of infantry, cut off and pinned down by withering small arms and automatic weapons fire. Sergeant Markle moved his half-track into position and immediately directed a machine gun fire on the enemy. When he saw a wounded man stranded in an area raked by heavy small arms fire, Sergeant Markle left the half-track and with complete disregard for his own personal safety dashed thirty yards to the wounded man, carried him across the bullet-swept terrain to the half-track. As he was climbing back onto the vehicle, Sergeant Markle was mortally wounded. The gallantry and concern for his comrades displayed by Sergeant Markle reflect great credit upon himself and the military service. x x x Pennsylvania.

Silver Star

CORPORAL NICHOLAS M. FUNARO, Hqrs & Hq Battery, 3rd AAA AW Bn. (SP), 3d Infantry Division, United States Army. On 5 February 1951, near Suwon, Korea, while on patrol, Corporal Funaro, a driver of an armored personnel carrier, voluntarily left his vehicle without hesitation and with complete disregard for his personal safety, and ran through intense small arms and mortar fire to a nearby tank. He removed a wounded officer, carried him through a hail of fire to the safety of his vehicle. Corporal Funaro's gallant action saved the officer's life and reflects great credit upon himself and the military service. x x x New York.

napalm.

When operating up front we have found it wise to conceal all positions. In some cases the mounts are hidden on reverse slopes. OP's are manned on the

alert. When an enemy target appears the M19 can move promptly to its predetermined firing position, engage the enemy, and then withdraw. You can be sure that the enemy will retaliate with mortar or gun fire if possible. By watching him closely you can tell how long that takes. It's a good idea to have the M19 through and gone before the time is up.

One day the 1st platoon commander, Lt. James D. Sehorne, Jr., observed five trucks moving down a river road across the river. These trucks were loaded with ammunition and enemy personnel. He immediately relayed his instructions to the section leader. The M19 pulled out and the first truck was hit by the second round—the last one was hit next and disintegrated with a terrific explosion. The convoy being blocked, was

then worked over front to rear. Total time to destroy five trucks, a large quantity of ammunition and dispose of forty-eight enemy (killed or wounded)—140 seconds.

By now the reader may be wondering what we do with the other half of the section, the M16. We are using it also with great results; however, it does not have the accuracy of the M19 on pinpoint targets. It is a formidable weapon which can also be used with outstanding results, both in offensive operations and defensively. It has proven most useful in the protection of field artillery units, convoys moving through guerrilla-infested areas, and in preparatory fire prior to an infantry attack.

Employed as a team with the other ground arms, the M19 and the M16 are an unbeatable combination.



Supplying A Self-Propelled Battalion In Korea

By Major Robert B. Hay and Captain Edgar J. Ross

THE 3rd AAA AW Battalion (SP), organic unit of the 3d Infantry Division, while in Korea, has encountered many problems of supply and maintenance which required deviations from and substitutions to the T/O&E and the use of field expedients.

To fully understand the problems

presented and the solutions evolved by experience a brief picture of the tactical employment of this battalion is in order.

The battalion is assigned the mission of direct support of the division. To accomplish this, firing batteries were normally assigned the mission of protection of field artillery battalions, with AA sec-

tions being made available for daylight patrols, support of infantry attacks, protection of division CP, air strips and bridges. Thus the tactical missions assigned units of this battalion resulted in sections being widely dispersed.

T/O&E 44-75N, under which this organization was activated, is adequate for units operating in a static or semi-static situation; however, such has not been the case in Korea. In order to cope with the problems of rapid movement, wide dispersion of firing sections, and heavy demand for gasoline and ammunition, the structure of the T/O&E had to be altered to meet the actual requirements.

Class I resupply was accomplished through battalion ration breakdown point with the exception that sections assigned to protection of FA units normally rationed with the supported unit. When SP units were used in support of infantry during daylight hours the sections carried combat rations for noon meal, eating early breakfast and late



Sgt. Merl Wall communicates with battalion CP while Cpl. John Garcia watches for enemy aircraft from their M16.

Silver Star

CORPORAL PAUL J. ASTLE, Battery B, 3rd AAA AW Bn. (SP), 3d Infantry Division, United States Army, distinguished himself by gallantry in action against an armed enemy near Majon-ni, Korea, on 29 November 1950. On this date, Corporal Astle was a member of a tank crew, which was furnishing protection for a convoy, when ambushed fifteen miles west of Majon-ni, Korea, by a well entrenched and heavily armed enemy. During the ambush a few members of the tank crew were wounded, and two regular assigned gunners deserted on the outset of the firing. Taking immediate action, Corporal Astle, while under heavy enemy fire, repeatedly exposed himself and alone loaded and fired the weapon on the vehicle. He continued his actions until a comrade came to his aid. Under Corporal Astle's direction, while still exposed to heavy enemy fire, they effectively and with great volume of fire from their weapon enabled the convoy to maneuver and then withdraw. During the withdrawal operation, Corporal Astle, again without regard for his personal safety, under enemy fire, assisted in the evacuation of the wounded and administered first aid. After completion of the withdrawal, Corporal Astle volunteered to go as gunner with another squad instead of remaining in comparative safety with his own vehicle. Corporal Astle's extraordinary valor, resourcefulness, and outstanding devotion to duty not only reflect great credit upon himself but are in keeping with the highest traditions of the military service. x x x Pennsylvania.

line resupply at installations on the route of march. This battalion consumed in excess of 120,000 gallons of gasoline during February and March; so one can readily see that procuring and distributing this one item is a sizable task.

The battalion is authorized nine 2½-ton cargo trucks for use as the battalion ammunition train. To overcome the resupply problem in the firing batteries one ammunition truck from the battalion ammunition train was attached to each firing battery. This truck was used to carry the remainder of the ammunition basic load which would ordinarily be stored in the battalion ammunition dump while in a static situation. The time element involved in transporting ammunition, plus the frequent movement of the battalion headquarters precluded the storage of any appreciable amount of ammunition. Ammunition trucks in the line batteries were used to resupply firing sections that were in direct support of Infantry. Ammunition was hauled as close to the firing positions as was practicable. This was found to be preferable to using ammo trailers for it gave the sections added mobility which was sometimes vitally necessary. When tactical requirements dictated, the ammunition was unloaded close to the firing positions or in the infantry assembly area and the truck was dispatched to battalion ammo dump for resupply.

ANOTHER problem encountered was the use of ammunition trailers. Change one to T/O&E 44-75N eliminates trailer ammunition, M28, substituting therefor trailer, cargo 1 ton. Trailer, 1 ton, cargo was inadequate for hauling 40mm ammunition due to the weights involved and the high incidence of broken springs. Also this trailer does not track with the M19, and on rough roads will easily tip over, unless provided with dual wheels. The M10 trailer proved to be capable of hauling more ammunition than the one ton cargo trailer, is more durable, and requires less maintenance.

Supply of some spare parts and replacement items was inadequate so that in many cases substitutes had to be used. In this category were generators for M19's. Carriage, motor, twin 40mm M19 has a 150-amp generator. Replacements for these generators were not available so a 50-amp generator from M24

tank was used and found to be satisfactory for the vehicle motor but did not generate enough current to power the turret. This was satisfactory for the ground role but will hamper the operation of the gun crew in an AAA role.

Briggs and Stratton Power Chargers for M16's were not available so a Signal Corps Power unit, PE210 was used as a battery charger for the turret of the M16. The PE210 provides adequate current but requires a high degree of maintenance and cannot be used for a sustained period of time.

Supply of Signal Corps radios was excellent, particularly in the 500 series. This battalion had several trucks, ¼-ton, converted to 12-volt system and mounted SCR508 radios in these jeeps for command and control purposes. This was done because it was not practical to use the T/O&E command vehicle (M39) for all purposes. It was more practical to use the lighter, less expensive ¼-ton truck.

The solutions reached by this unit to solve the supply problem created by the type of terrain and tactical missions encountered in the Korean campaign are necessarily temporary and are not recommended as permanent changes to the T/O&E. They have been devised to meet the problems peculiar to this campaign and serve to demonstrate the continuing requirement for adaptability to meet any given set of conditions.

Silver Star

MASTER SERGEANT JOSEPH E. FERRELL, Battery A, 3rd AAA AW Bn. (SP), 3d Infantry Division, United States Army. On 15 February 1951, near Panganga-ri, Korea, Sergeant Ferrell, while returning from a supporting fire mission with the 2d Battalion, 15th Infantry, came upon another platoon of infantry and a forward observer team pinned down from devastating enemy small arms and mortar fire. Running from vehicle to vehicle, heedless of the enemy fire, he directed his platoon of halftracks to bring accurate fire on the enemy. Using his knowledge of the enemy situation he personally directed tanks into position upon their arrival and under his direction caused the tanks to bring fire to bear on the enemy. During the firing Sergeant Ferrell went to the pinned-down area numerous times and physically carried out eight wounded infantrymen to safe positions where they could receive first aid and be evacuated. Due to his superb leadership and aggressiveness the enemy fire was neutralized and the pinned-down platoon and observer team were able to leave in comparative safety. Sergeant Ferrell's gallant and heroic actions reflect great credit upon himself and the military service. x x x Georgia.

76th AAA Automatic Weapons Battalion (SP) In Korea

By Captain Russell P. Mahon, Artillery, PIO

WHILE most of the AAA units in Korea have been engaged primarily as ground support, the 76th AAA AW Battalion (SP) has been used as AAA during its entire stay in Korea.

The battalion was commanded initially by Lt. Col. Charles L. Andrews. Later he was transferred to Headquarters 10th AAA Group and was relieved by Lt. Col. Troy A. Barker.

The battalion was rushed to Korea in August. It was the first complete AAA battalion to arrive. From the very beginning one of the major problems has been in the maintenance of the self-propelled equipment. This equipment was used in the Pacific during the last war and is in the last stages of usefulness. However, most of it has been kept in operation through the heroic efforts of the battery maintenance sections and the battalion maintenance section under Captain Neill B. Dunson and 1st Lt. Wilbur A. Rawlins.

Upon arrival the battalion established an AAA defense for the docks and other vital installations in Pusan.

At the same time Battery A 933rd AAA AW Battalion (M) commanded by Captain Theodore Carter, and Battery D 865th AAA AW Battalion (SP) commanded by Captain George W. Eisenman, were attached to the battalion. Both of these organizations had



AAA SILHOUETTE: The 76th in an air defense role in Korea.

been sent to Korea as separate batteries approximately two weeks after the commencement of hostilities. They were protecting, at that time, the airstrips at Yongdok and P'ohang-dong.

An additional assignment given to the battalion was the defense of the Taegu airstrip. Battery D, commanded by Captain William J. Sandercock, moved by road march to establish the defense of the airstrip, which was then just in rear of our front line defenses. Battery D was called upon several times to furnish sections as security for units moving through the guerrilla infested areas surrounding Taegu. On one of these occasions an ambush was encountered and two M16's were disabled and two members of the section were wounded by small arms fire.

Shortly afterward, the two batteries at

P'ohang-dong and Yongdok were relieved from their missions because enemy activity in those areas had made the airstrips untenable. They were moved to Pusan.

In the latter part of September, United Nations advances had cleared the P'ohang-dong strip for use and Battery D 865th again assumed the defense of that field.

Battery A 933rd was assigned to augment the defense of the Taegu strip.

With the battalion widely dispersed, the battalion headquarters was divided into two skeleton headquarters and designated Headquarters AAA George under command of Lt. Col. Troy A. Barker and Headquarters AAA Fox under command of Major Robert H. Johnston. Over-all command remained with the battalion commander, Lt. Col.



Lieut. Col. Troy A. Barker and Capt. George W. Eisenman inspect a position of Battery D, 865th.

Charles L. Andrews.

AAA George moved to Taegu immediately and assumed active control of the two batteries there and the one at P'ohang.

This improvised command setup was used until after the withdrawal from P'yongyang in December and since representatives of all staff sections were present in each command, tactical and administrative problems were solved in each echelon with a minimum of delay, travel and communications between the command.

As a result of the United Nations offensive initiated at the Inchon landings, the battalion began to get new missions in October to defend Inchon, Kimpo Airfield, and the Army, Air Force, and ROK government installations in Seoul. There followed a continual series of movements, usually by battery and by stages, which moved all batteries—some far to the north.

Batteries C and D, 76th AAA AW Battalion and Battery D, 865th AAA were the first to move to the Seoul area, where Captain Albert V. Dean established the Kimpo Airfield defense with Battery C.

Battery D, 865th kept on moving to P'yongyang. It was soon to engage one of the enemy planes that had been conducting harassing raids, at night. No claim was advanced for a kill, but the enemy raids stopped with that firing.

The first Platoon, Battery D, 76th, under 1st Lt. Jack R. Hayne, set up the initial defense of Seoul. However, the entire battery moved on shortly to the airstrip at Sinanju.

Battery A, 933rd moved from Taegu to P'yongyang.

Headquarters AAA George moved to P'yongyang to command the three forward batteries.

Meanwhile, the other batteries had also been on the move. Captain James

M. H. Shugert's Battery A was defending the port installations at Inchon. Battery B, commanded by Captain August Koenig, was defending the Seoul area with Lt. Samuel Slyman's platoon on the bridges over the Han River. Later in the withdrawal these bridges took on greater importance. The entire battery defended there until it was relieved by the Commanding General I Corps. By that time the motor traffic had ceased; foot troops were delaying and fighting the Communist forces in the city. Two hours later engineers blew up the bridges.

The batteries in the P'yongyang area continued their defense until the Chinese attack made withdrawal to the south necessary.

Battery D, 865th was the last American unit to leave P'yongyang, leaving only when the Communists were entering from the north.

There then followed a series of movements back to the south. Most of the batteries stopped en route to set up and maintain a defense in the Seoul area until other elements had cleared.

Throughout the campaign the batteries have found it necessary to maintain an alert defense against guerrillas and spies. They mingle with the refugees in such fashion as to impose a continual problem.

Obviously the constant threat of enemy air attack made it vital to maintain the AAA defense in this campaign. How-



C Battery's well dug-in M16 is manned by Cpl. J. T. Townsend, Sgt. Charles H. Davis, Pvts. Nathaniel Raullerson and McKinley Mosley.

ever, the enemy planes carefully avoided our positions and gave the Ack-Ack gunners no chance to test their shooting eyes.

Naturally this lack of Antiaircraft activity operates to dampen enthusiasm. The situation calls for an active program of training and recreation.

Recently all of the batteries have arranged to allow the gun crews to conduct antiaircraft target practice at the firing point set up by the 10th AAA Group. This was particularly valuable, as a lot of the new men had their first opportunity for such firing.

Chaplain Beverly M. Ward has also been very helpful in conducting an entertainment program as well as his effective religious program. His programs in P'yongyang were well attended by our battalion, and also by the Air Force personnel. Recently he has set up here an excellent place of worship, which also serves the same purpose as the typical parish house in the States.

The 76th does not yet have a high score of enemy kills; however, we have carried out our mission and profited from the campaign to become a seasoned outfit. We are still defending some vital installations and also pushing the training to increase our proficiency. Just now the old proverb applies: "He also serves who stands and waits."



A Han River crossing protected by B Battery.



NOTIFY THE JOURNAL WHEN YOU CHANGE ADDRESS

EARLY PRESS CENSORSHIP

By Capt. James S. Douglas, GSC

DURING the past decade there have been several instances where the military and the public press have not seen eye-to-eye on matters of censorship. The most recent such instances occurred as late as this year with respect to Korean correspondents. These relatively recent events, however, are not new in the annals of either the military or the public press.

In the Civil War period there were more than half a hundred cases wherein the military did its best to censor or suppress Northern newspapers which, as the military put it, "espoused the cause of the Southern Confederacy." Many of these clashes led to bloodshed—all of them led to bad relationships and an ever-widening split between the two factions. Let us review one outstanding case.

On April 13, 1863, General Ambrose E. Burnside, commander of the Department of the Ohio, issued General Order No. 38, branding as traitors and spies those persons who committed "acts for the benefit of the enemies of our Country." This order, in listing the several categories of "traitors and spies," stated:

"The habit of declaring sympathies for the enemy will no longer be tolerated in this department. Persons committing such offenses will be at once arrested, with a view to being tried . . . or sent beyond our lines into the lines of their friends."

In spite of the furor on the part of the public, Burnside would not be dissuaded. The General Order would not be withdrawn.

A particular thorn in the general's side had been for several months the Chicago *Times* (not an antecedent of the present Chicago *Sun-Times*). It had printed remarks which were by inference defamatory and which might well have been within the scope of the general's order, regardless of the legal status of the order. This paper, guided by the eccentric Wilbur Storey, had made references to such

matters as "His Excellency, President Davis," but it seldom named individuals in its tirades. On May 9, 1863, however, the *Times* mentioned the general by name in an editorial which began:

"We do not credit that the administration are gone stark mad, and therefore we do not believe they are bent on provoking civil disturbances in the North, but they must be made to know, if they do not know, that the high-handed measures which Gen. Burnside has inaugurated in his military department, respecting freedom of speech and press, cannot be pursued as a policy without the greatest danger of provoking civil disturbances."

There followed more such comments. The final barb was a later statement by the *Times* concerning the arrest and trial by Burnside of a minor politician named Vallandigham. With lightly veiled subtlety, the editorial said, "Gen. Burnside is now rashly dashing himself against the law, as he did against the rebel fortifications at Fredericksburg." Few readers were ignorant of the fact that Burnside had sustained more than 10,000 casualties in one day alone at Fredericksburg. On June 1 the *Times* was ordered suppressed, and under the threat of military force it ceased publishing.

Amid the mass meetings and confusion that ensued, Burnside himself wrote a letter to the Circuit Court for the Southern District of Ohio to justify his actions. The letter is quoted in part below:

"If I were to indulge in wholesale criticisms of the policy of the Government, it would demoralize the army under my command, and every friend of his country would call me a traitor. If the officers or soldiers were to indulge in such criticisms, it would weaken the army to the extent of their influence; and if this criticism were universal in the army, it would cause it to be broken to pieces, the Government to be divided, our homes to be invaded, and anarchy

to reign. My duty to my Government forbids me to indulge in such criticisms; officers and soldiers are not allowed to so indulge, and this course will be sustained by all honest men. x x x It is my duty to my country and to this army to keep it in the best possible condition—to see that it is fed, clad, armed, and, as far as possible, to see that it is encouraged. If it is my duty and the duty of the troops to avoid saying anything that would weaken the army, x x x it is equally the duty of every citizen in the department to avoid the same evil. x x x

"The press and public men, in a great emergency like the present, should avoid the use of party epithets and bitter invectives, and discourage the organization of secret political societies, which are always undignified and disgraceful to a free people; but now they are absolutely wrong and injurious; they create dissensions and discord, which just now amount to treason. The simple names of 'patriot' and 'traitor' are comprehensive enough. x x x

"Citizens do not realize the effect upon the army of our country, who are its defenders. They have never been in the field; never faced the enemies of their country; never undergone the privations of our soldiers in the field; x x x therefore, the greater responsibility rests upon the public men and upon the public press, and it behooves them to be careful as to what they say. They must not use license and plead that they are exercising liberty. x x x My duty requires me to stop license and intemperate discussion which tend to weaken the authority of the Government and army; whilst the latter is in the presence of the enemy it is cowardly so to weaken it. This license could not be used in our camps—the man would be torn in pieces who would attempt it.

"There is no fear of the people losing their liberties. x x x All intelligent men know that our people are too far advanced in the scale of religious civili-

zation, education, and freedom to allow any power on earth to interfere with their liberties. x x x It is said that we can have peace if we lay down our arms. All sensible men know this to be untrue. Were it so, ought we to be so cowardly as to lay them down until the authority of the Government is acknowledged?

"I beg to call upon the fathers, mothers, brothers, sisters, sons, daughters, relatives, friends and neighbors of the soldiers in the field, to aid me in stopping this license and intemperate discussion, which are discouraging our armies, weakening the hands of the Govern-

ment, and thereby strengthening the enemy. If we use our honest efforts God will bless us with a glorious peace and a united country. Men of every shade of opinion have the same vital interest in the suppression of this rebellion; for should we fail in the task the dread horrors of a ruined and distracted nation will fall alike on all, whether patriots or traitors."

* * * * *

Burnside lost his fight to suppress the *Times*. After an exciting three days in Chicago, with nearly riotous conditions prevailing, the paper resumed publica-

tion on June 4. For the next twenty days the *Times* blared forth, trumpeting loudly its "victory"—so long and so loudly that the public soon grew exhausted. "Wednesday was a day for Chicago to be proud of. By the voice of her citizens she proclaimed that the right of free speech has not yet passed away. . . . We have, then, still a FREE PRESS. Major Generals may not interfere with it. . . . Its binding fetters are released. . . ."

Two months later it was all but forgotten, the same as recent incidents in Korea.



BATTERY SUPPLY

and how to keep it from being a headache

By Capt. Theodore Wyckoff

If you are a Lieutenant or a Captain commanding an antiaircraft artillery battery—any type—the biggest problem you've got is supply. In the last nine years I have commanded almost every type of AAA battery, and they *all* have supply problems.

At first, back in 1942, I was young and innocent as a battery commander, and made my full share of mistakes. But I have specialized in supply right where the strings are short, and now I have the crust to offer you some pointers.

First, just in case you don't realize what a big job you're saddled with, I want to give you a few eye-opening facts and figures. When you take over command of a 90mm gun battery, as an example, you take over property accounts totalling *six hundred thousand dollars*,

made up of some *nineteen thousand* separate nonexpendable items, which you have got to count. Let me just give you a quick breakdown of what this property consists of.

T/O&E property (some items estimated:

Chemical	\$ 3,512.66
Engineer	12,427.19
Ordnance	399,464.73
Quartermaster	2,204.53
Signal	154,694.65
Total.....	<u>\$572,303.76</u>

Post, Camp and Station property (my battery, as an example):

1,195 sheets, pillowcases, mattress covers ..	\$ 1,891.29
603 knives, forks, and spoons	147.48
114 other items—	
2,219 pieces ...	<u>10,762.72</u>
Total.....	<u>\$ 12,801.49</u>

Captain Theodore Wyckoff commands the Hq Battery, 34th AAA Brigade, APO 743.

Organizational Equipment: .	
158 sleeping bags,	
mountain\$ 3,785.68	
36 other items—	
8,058 pieces 14,074.64	
Total.....	<u>\$ 17,860.32</u>
GRAND TOTAL	<u>\$602,965.57</u>

How are you going to keep all this property at your finger tips with the personnel you have? Maybe you have a supply officer to help you. Maybe you have a good supply sergeant—more likely he has had very little experience and you'll have to teach him as you go along. If you have a supply clerk, it's because you're using your bugler or some other man—the T/O&E doesn't allow you a second man in the supply room.

THE first thing you're going to do is to count those sheets, pillowcases and mattress covers. They'll give you more trouble than everything else put to-

gether. Now you cannot delegate responsibility for those sheets. Paragraph 4, AR 35-6520 puts it squarely on you. You can't have the supply sergeant sign to you for those sheets, but you *can* supply him three or four wall lockers, each with a padlock and one key, and write him a letter charging him with the responsibility for safeguarding the sheets and instructing him and only him to handle any transactions involving sheets; ordering him to keep a daily running inventory of these items, and to report immediately to you any situation which might compromise the security of the sheets.

Your duplicate keys to his locks should be kept in sealed envelopes in your safe. That letter, plus an active daily check on your part, should be enough to keep the sheet situation in hand, and cover you if something goes wrong. The same procedure applies to certain other classes of property, such as your kitchen, athletic and communications equipment. Count your knives, spoons, forks, and chinaware cups and bowls, and keep your finger on the situation! When the end of the quarter arrives, don't forget your droppage and breakage allowance.

You've counted your cots, footlockers, and chairs, your watches and compasses in the safe, and all the many things in your supply room. Did you ask questions as you went along? Does every entry in the property book have a voucher to back it up? Are quantities in the property book equal to T/O&E allowances? If they are not, is there a validated requisition to make up the difference? If not, you'll be left holding the bag unless you can find a basis for a requisition. How about the Forms 189—are all the columns charging your men with \$17,000 worth of organizational equipment properly initialed? Suppose Joe Blow says, "I never received a sleeping bag. I never initialed that column." You'd better check—carefully.

Now we're going to check tools and equipment. This afternoon, guns, power plants and director. Tomorrow, all day, will be trucks, tractors, the bulldozer

and second echelon tools sets, and the following day radar in the morning and communication equipment in the afternoon. The battery has been alerted to have everything laid out for inspection.

Before we start—a couple of questions. Do you have all your tool lists? Are they complete? How do you know? Was your 2½-ton truck tool list taken from SNL G-508? Do you have a correct list of the tools that go with your M7 power plant, based on ENG 7? How about your D-4 bulldozer tool list—is it based on ENG 7 also? Do you have a tool list for your radar; is it based on SIG 11-1? How about your PE 162—the generator for your radio set AN/GRC-9; do you have a tool list based on SIG 11-1? And the radar repairman's tool set TE 113, do you have a complete tool list on it? By the way, when you checked your field ranges, M-1937, did you go by QM 3-4? And did you check your carpenter's tool set by QM 3-4? If the previous battery commander can produce all these tool lists, signed by the individuals who require that these tools be issued to them to perform their battery duties, then you know that he has been on the ball. If he cannot, watch out. In all, you have about 107 tool sets and kits, with approximately 7,000 separate tools.

When you've counted all your property (and you'd better not rest until it's done—AR 35-6520 says the joint inventory will be accomplished "upon transfer") your work has only begun. If there are shortages, don't be a sucker and assume them yourself. And don't kid yourself that you can trade off your predecessor's overages. Nobody's going to give you a dozen sheets for that extra old jeep tarp. When you've got your list of shortages, inform your commanding officer of the fact in writing, and ask him if he wishes to give your predecessor any time to make up the shortages before you submit your survey. Then write up your Report of Survey and get it ready to submit. Any shortages that are made up can be crossed off, but the thing you are fighting against is time: unless your survey is submitted imme-

diate upon completion of your inventory (not 30 days, AR 35-6640 says "immediately") or unless you have received permission to hold it for a period of time, it will bounce and *you* and not your predecessor will be stuck.

Once your name appears on orders as CO of any given battery—you're the boss. But the only way you can get everything done is to get your subordinates to work for you. Neither you nor the supply sergeant can do everything that has to be done to keep supply rolling along. If I were you, I'd make sure my key NCO's knew the mechanics of the resupply system. Which of two chief radar operators do you think gets his spare tubes first—the man who writes up his own requisition by looking in the SIG catalog, or the man who waits for the supply sergeant to do it? Remember, the supply sergeant has the laundry, the sheets, and a hundred other duties to keep him busy. Which of two motor sergeants do you think is going to have the better set of tools—the man who knows exactly what tools he wants on the next quarterly droppage—nomenclature, stock number and price—or the man who never counts his tools until you come down for an inventory?

The whole supply problem boils down to the practice by the troops of practical supply economy. I have found that soldiers will respond when they are taught to take care of government issue property as they would of their own, and I know they will respond when they are shown a statement of charges for lost or damaged property, with cold dollars and cents coming straight out of their pockets.

Remember, the superior value of the American soldier is based on his ability to get tremendous fire power and mobility out of the machines with which he fights. That's more true of antiaircraft than of any other ground arm. But the machines are only as good as the supply system which supports them, and that supply system, brother, rests squarely on the shoulders of the battery commander. Bear down on it!



KNOW YOUR Fr



FJ-1 "Fury," North American jet fighter in use by the Navy. Its service ceiling is over 36,000 feet, and it has a rated speed of more than 500 mph.



Swept-wing "Skyrocket" has a combined rocket and jet power plant and has proven valuable in obtaining information at speeds near the sonic range of flight.

friendly AIRCRAFT



F6U "Pirate" powered with a Westinghouse 24-C single jet engine.



Navy's "Banshee" Twin jet engined, carrier based, fighter reaches altitudes of over 51,000 feet and is rated in the 575 mph class.

New Signal Equipment For AAA

By Lt. Col. Peter W. Pedrotti

JUST a few words to AAA men about the effects on the operating efficiency of their unit which will result from receiving the new items of signal equipment which recent changes in T/O&E's have authorized.

Items discussed here are:

Radio set:	Replaces:
AN/GRC-3 or 7	SCR-508
AN/GRC-5	SCR-608 and 808
AN/GRC-4 or 8	SCR-528 and AN/VRC-5
AN/GRR-5	SCR-593
AN/PRC-8 or 10, W/PP-545/U	SCR-510, and 300
AN/VRC-9	SCR-619

Switchboard:
SB-22/GT BD-71 and 72

The radio sets AN/GRC-3/7 and 4/8, used primarily in AAA by the AW (SP) units, have several added features over their predecessors, and with no increase in size or weight. They are not limited by channel crystals to a set number of usable frequencies. They are able to be tuned to any channel in their assigned band. The basic component is a "Transceiver," which means the operator tunes both transmitter and receiver simultaneously and with the set in proper operating condition he can change from any one channel to any other channel in a matter of seconds. A set that has an extra or auxiliary receiver component to permit monitoring of two frequencies at one time is designated AN/GRC-3, 5 or 7, depending on frequency band (see figure 1). A set without the auxiliary receiver is correspondingly, an AN/GRC-4, 6 or 8 (AAA uses no GRC-6). The Transceiver and Auxiliary Receiver of the three basic frequency bands are called the "A" components, and have a communication range of 10 to 15 miles.

All sets, AN/GRC-3 through 8 have a "B" component transceiver which has 115 channels and will communicate a distance of one mile. This permits intercommunication between units that are equipped with "A" sets of different frequency range, and also permits foot troops equipped with the AN/PRC-6 (new handie-talkie) to talk to nearby vehicular stations.

Another feature of the AN/GRC-3 through 8 sets is the addition of a retransmission unit which permits a signal entering a receiving element of the set to be automatically re-broadcast on a different frequency from the transmitting element of the other component. In this respect the set will act like a switchboard

and relay calls without the necessity of having the operator write down messages and then repeat them over the air.

Further, the AN/GRC-3 through 8 sets have an interphone amplifier and control boxes which permit operation of the set from various stations within an armored vehicle.

The AN/PRC-8 and 10 which match the AN/GRC-3 and 7, respectively, in frequency coverage were designed from the Infantry Pack radio SCR-300. They weigh 19 lbs. ($\frac{1}{2}$ that of SCR-300) in pack form and when mounted in a $\frac{1}{4}$ -ton truck they use a vibrator power pack PP-545/U. They have two antennas—one for pack and the other for ground or vehicular station. The pack antenna

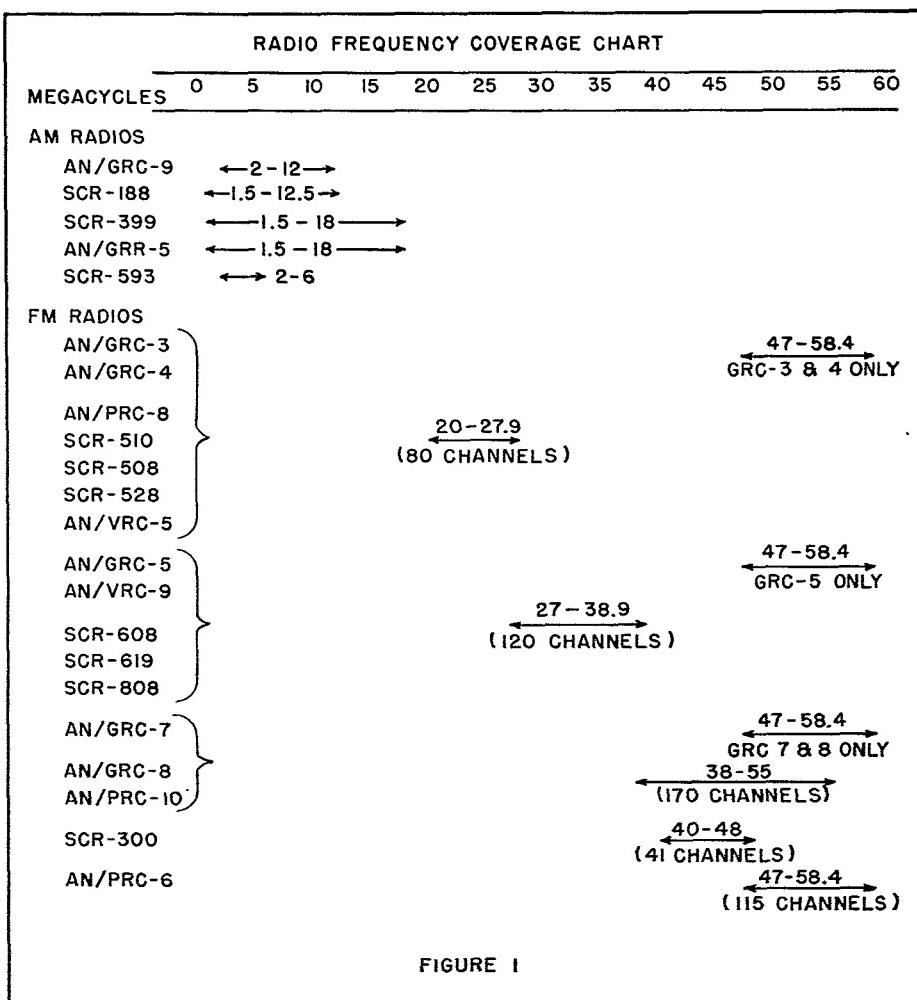


FIGURE 1

Lt. Col. Peter W. Pedrotti was an instructor in the AA and GM Branch, The Artillery School. He now commands the 73rd AAA AW Bn. (SP) at Fort Bliss.

will give 3-mile communication and the other 5 miles.

The notations in the remarks column of T/O&E's 44-76N and 77N regarding the issuance of these new sets mean that AAA units will have radios working in the same frequency band as the infantry or armored units to which they are assigned or attached. There will be no need for AAA to carry extra sets for liaison purposes when operating in a ground role.

It will be noted that Change 1 to T/O&E 44-77N did not change the status of SCR-300 radios authorized the AW Platoon Hq. Since all infantry units have their T/O&E's changed to authorize them the new radios, there is no apparent reason for keeping the SCR-300's and the AA&GM Br TAS has asked for a clarification on this. The SCR-300 will communicate with any other radio in the 38-55 mc band but since the channel band width of the SCR-300 is .2 mc and the new sets have .1 mc channel band width, the SCR-300 blocks out 3 channels on the newer sets every time it goes on the air.

All these changes mean just this to the AAA—the AW (SP) Bn will truly take its place as an integral part of the Division fighting team—prepared to carry out any mission directed by the Division or DivArty Commander!

THE AN/GRC-5 radio authorized the AAA Gun Battalions gives them the latest model for maintaining liaison with reinforced Field Artillery units.

The AN/VRC-9 radio authorized the AAA Abn Battalion is a set made up of the basic transceiver and power unit of the AN/GRC-5. The modification kit MX-898/GR permits the set to be operated while removed from the vehicle. This eliminates many of the poorer features of the SCR-619, namely transmission range, power supply, tuning procedure, etc.

The AN/GRR-5 receiver which has been authorized to replace the SCR-593 corrects all the deficiencies of the 593, but at the expense of increased size and weight. The decisions to accept the AN/GRR-5 as a replacement for the SCR-593 in spite of increased size and weight were made largely on its ability to do the desired job and the fact that AAA equipment is not generally required to be man-carried. Following are

comparative data on the two sets:

	SCR/593	AN/GRR-5
Size	1/4 cu ft	1 cu ft
Weight	26 lbs	63 lbs
Power adaptation	6v	6, 12, 24v dc; dry pack; 110v ac, 60-400 cy
Frequency coverage*	2-6 mc	1.5-18 mc
Tuning procedure	Matched with transmitted signal (limited to 4 settings throughout entire band — 1 in each of 4 separate segments of band)	Direct dial setting
Signal output	Speaker and limited remoting facilities	Speaker, 2 phone jacks and remote jack for 250 ohm line
Presetting	4 presettable channels requiring experienced repairman or operator	10 presettable channels requiring no technical training
Signal sensitivity (approx)	1	10

*(See figure 1.) The AN/GRR-5 is capable of receiving any signal transmitted by either the AN/GRC-9, SCR-188 or SCR-399, which are normally used by AAA units in broadcasting warning information. The SCR-593, not having such frequency coverage, has always restricted the transmitting stations in the selection of usable frequencies.

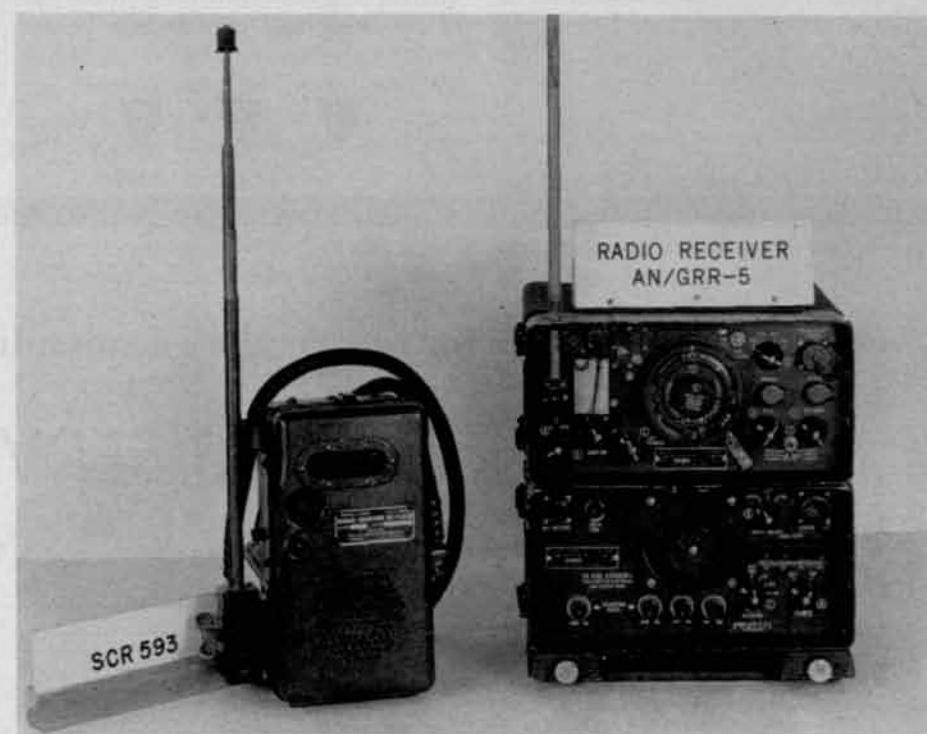


Figure 2.

THE new switchboard, SB-22/GT, which replaces both the BD-71 and 72, is a 12-line unit board weighing 22 lbs. In addition to being light in weight, it has these added features:

- Line units may be replaced by removing two small screws on face of board.
- Operators set may be removed by taking out four screws on face of board and, when operating more than one
- Shallowness of case and interlocking devices facilitate stacking of boards when increasing line terminations at a switching center.
- Cords are retractable on spring-wound reels and will not hang down in

board as a switching center, the operators set of all but one board can be replaced by five additional line units—a 3-board center can have 46 line terminals.

mud or dirt.

e. Board will operate in any position—omnipositional signal devices eliminate necessity of leveling.

f. Directional ringing avoids annoyance to a party with receiver close to his ear.

g. Metallic contact between units when connected facilitates passing dc currents necessary for remote operation of a radio station by any party switched through to a radio set with a properly designed remote control unit.

All the above-mentioned items of signal equipment—AN/GRC 3-8, AN/PRC-8 and 10, AN/GRR-5 and SB-22/GT—are currently in production and it is expected that many AAA units will be issued them before the end of the current year. It behooves each AAA officer and NCO to familiarize himself with them, their capabilities and limitations. He should keep in mind that, as a general rule, when a new item of equipment does more and better jobs,

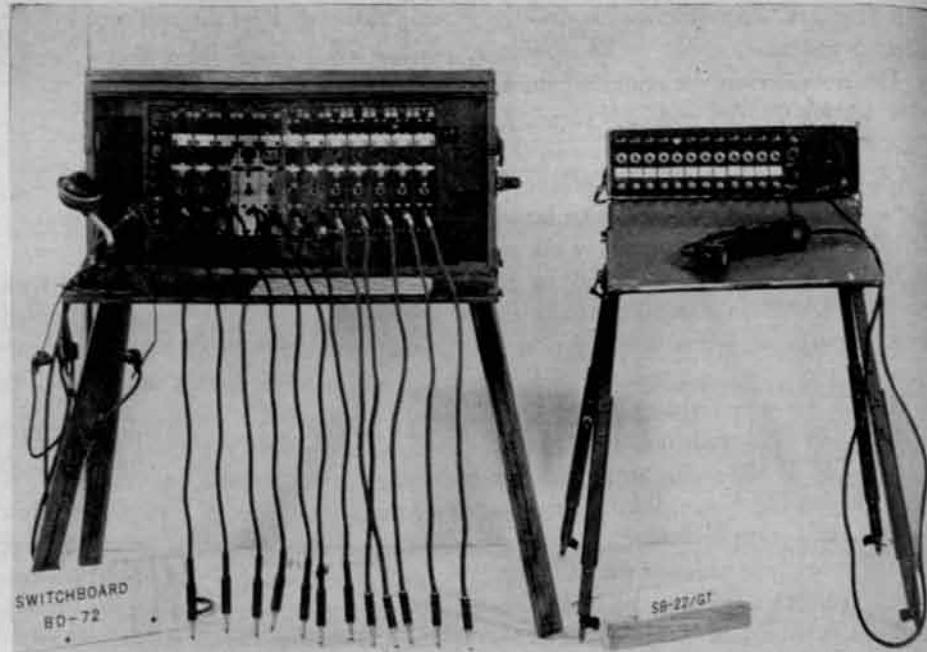


Figure 3.

it is more complex, and requires a higher state of technical training on the part of operating and maintenance person-

nel, if the unit is to realize the fruits of the labors of scientists and engineers who make these conveniences available.



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Indirect Fire With 40MM AAA Weapons

By Major David B. McFadden, Jr., Arty.

REPORTS from Korea indicate there is a growing tendency to utilize automatic weapons for indirect fire missions against ground targets when the terrain and range will permit. These reports indicate the need for gunnery methods which will permit rapid and accurate indirect laying. The methods described in this article have been tested by the Gunnery Department of the Antiaircraft and Guided Missiles Branch, The Artillery School, and are presently being employed to teach and demonstrate this method of firing. In general, all techniques are based on standard field artillery gunnery methods as outlined in FM 6-40 and FM 6-140; however, it was necessary to slightly modify firing battery and fire direction procedure due to the nature of the matériel employed and the firing table data available. Emphasis has been placed on the employment of the twin 40mm gun motor carriage M19A1, but the towed 40mm antiaircraft gun has also been considered.

GUN LAYING

IT is immediately apparent that some device must be available to lay weapons in direction. In the case of the twin 40mm gun motor carriage M19A1, an azimuth indicator T-23 (Fig. 1), is available for this purpose; however, since an azimuth indicator has not been provided for the towed 40mm antiaircraft gun some other device must be employed. It is possible to paint or inscribe an azimuth scale on the base ring of this weapon which would permit laying the tube in

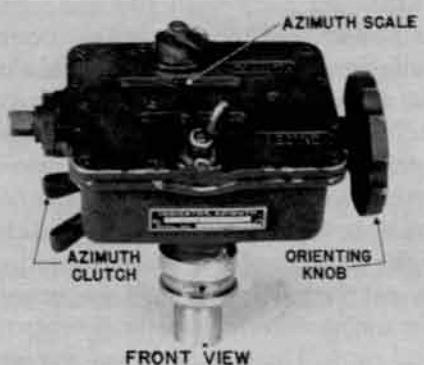


Figure 1.

direction; however, it was found that the M12A2 panoramic sight could be mounted on an improvised bracket on the azimuth side of the weapon and would provide a more accurate means of laying the weapon in direction (Fig. 2).

The only modification required on this sight is the reversing of the coarse



Figure 2.

and fine scales. This is accomplished by pasting paper scales over the existing scales of the sight (Fig. 3), in order that azimuths rather than deflections can be set on the sight. The coarse scale is graduated in 100 mil intervals from 0 to 6400 mils, and the fine scale in one



Figure 3.

mil intervals from 0 to 100 mils. This allows the laying in direction to the nearest mil. This modification converts the panoramic sight into an azimuth indicator and permits the laying of the tube by azimuths rather than deflections, thus conforming to standard practice in laying all other antiaircraft weapons.

Information required to lay the weapons in direction consists of the location of the position area and a direction to a known reference point. Such information can normally be secured from a nearby field artillery unit, taken from a detailed battle map, or if necessary assumed. Of course, the most accurate survey information available should be used. No great difficulty is involved; however, the personnel must be trained in basic methods of securing required information.

The M19A1 equipped with the azimuth indicator T-23 (Fig. 1 & 4) can be laid in direction with or without the aid of an aiming circle; however, more rapid and accurate laying is accomplished when an aiming circle is available. When an aiming circle is not available, the weapon is boresighted on a reference point of known direction; then without moving the tube, the azimuth

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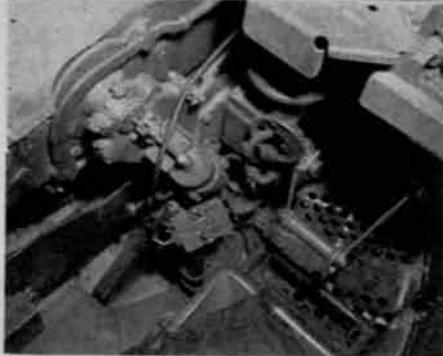


Figure 4.

indicator is disconnected from the base ring by moving the azimuth clutch lever to the disengaged position; next the azimuth to the reference point is set on the indicator by means of the orienting knob. The final step is to re-engage the azimuth clutch lever, and the weapon is then laid in direction. This method is referred to as the *known datum point method*.

When laying with the aid of the aiming circle, the aiming circle is oriented with its 0-3200 line parallel to the north-south grid line. Then the M19A1 is laid in direction by boresighting the left tube of the weapon on the aiming circle, and then sighting the aiming circle on the center of this tube. When the axis of the bore of the tube and the line of sight of the aiming circle coincide, the back azimuth of the reading secured from the aiming circle is set on the azimuth indicator and the gun is laid in direction. For greater accuracy the clockwise angle from grid north to the center of the tube should be measured three times with the aiming circle and the back azimuth of the average of the three readings applied to the azimuth indicator. This method is known as the *backsighting method of laying*.

The towed 40mm gun is laid in direction with the aid of an aiming circle. The aiming circle is again oriented with its 0-3200 line parallel to the north-south grid line. The M12A2 panoramic sight is mounted in its bracket and the scales of the sight set on zero reading. Next the optical axis of the sight is aligned with the axis of the bore by boresighting on a distant object and then aligning the sight on the same object. The next step is to point the tube of the weapon in the general direction of grid north and then the clockwise angle from grid north to the head of the panoramic sight is measured with the aiming circle. The

back azimuth of this reading is now set on the panoramic sight. The gun is then traversed until the line of sight of the panoramic sight is directly on the head of the aiming circle. This procedure is repeated until the back azimuth of the aiming circle reading agrees with the reading on the panoramic sight. This procedure establishes the gun bore parallel to the north-south grid line.

The scales of the sight are then carefully zeroed without moving the tube of the weapon, and aiming stakes are placed in line with the vertical hair of the panoramic sight. The near stake is placed seventy-five yards from the gun and the far stake one hundred and fifty yards. Since the tube of the gun was pointing at grid north when the sight was zeroed, the aiming stakes indicate the direction of grid north. The tube of the weapon was initially pointed in the general direction of grid north in order that the parallax error introduced by the displacement of the sight from the center of the tube could be quickly eliminated. The aiming stakes may be set out in a direction other than grid north by slipping the course scale on the panoramic sight.

The M12A2 panoramic sight can also be mounted on the M19A1 and employed to lay this weapon in direction. This necessitates devising a special type of bracket which can be mounted to the right of the azimuth tracker (Fig. 5). Initial laying in direction is accomplished

in the same manner as in the case of the towed 40mm gun. However, the right tube of the M19A1 should be boresighted on the aiming circle in order that the parallax error resulting from the displacement of the optical axis of the sight from the axis of the gun bore may be reduced.

Both types of weapons must be laid in elevation by means of the gunner's quadrant. Experience has established that well trained crews can quickly apply elevation to the tube by this means. For increased accuracy, a quadrant surface can be prepared on the upper surface of the breech casing of the M2 40mm gun on the M19A1. Care must be exercised to insure that the quadrant setter always places his quadrant on the same area each time. This can be accomplished by inscribing marks on the prepared surface. The towed 40mm gun is provided with marked quadrant seats on the upper surface of the breech casing. As will be pointed out later, it is necessary to carry quadrant elevations to the nearest tenth of a mil if the required accuracy of fire is to be attained. Last motion of the quadrant bubble should always be from front to rear in order that backlash in the gear train may always be taken up in the same direction each time.

Another important factor is to eliminate the effects of cant. Cant exists in a weapon when the trunnions are in-



Figure 5.

clined from the true horizontal plane. Cant will cause direction to be measured in a plane other than the true horizontal plane, and elevation to be measured in a plane other than the true vertical. This will result in errors in both azimuth and elevation. Means are available for the removal of cant from the towed 40mm gun as leveling jacks are available, but the carriage of the M19A1 can be leveled only by preparing the surface on which the tracks rest. The M19A1 should be roughly cross-leveled before initial laying in order to reduce the effect of cant. Quadrant seats on the left side of the trunnion of the weapon are used when cross leveling the carriage.

FIRE-DIRECTION PROCEDURE

THE target grid system of field artillery gunnery can be effectively employed to direct the fire of 40mm anti-aircraft artillery weapons. This system is slightly modified due to the fact that the weapons are laid in direction by applying an azimuth rather than a deflection, and also due to lack of firing table information of the value of drift and the fork. The reader is referred to F.M. 6-40 or S.T. 44-4-3, AA & GM Br. TAS, for details of fire-direction procedure since space will permit only discussion of the deviations from the normal procedure in most cases.

The firing chart can consist of a grid sheet, battle map, or photomap which indicates the relative horizontal and vertical positions of weapons, base points, targets, check points and any other information required in preparing firing data. With 40mm weapons, the scale of the firing chart should be 1:25,000 or larger. Smaller scales do not permit sufficiently accurate measurements from the firing chart. As in the case of field artillery gunnery for heavy antiaircraft artillery weapons, a base point line index is constructed at the nearest 100 mil azimuth from the center of the position area to the base point. This procedure facilitates the marking of the range deflection fan. It might be pointed out that this index is comparable to the base point line extension used by the field artillery in their fire-direction procedure. On completion of the initial precision registration, an index is constructed on the firing chart corresponding to the adjusted azimuth derived from the regis-

tration. This new index is referred to as the azimuth index and is used thereafter in reading azimuths. The target grid is employed in the conventional field artillery manner, but the index placed on the firing chart for the purpose of orienting the target grid is referred to as the target grid azimuth index rather than azimuth index since the term azimuth index has already been employed to describe the line constructed on the chart to correspond to the adjusted azimuth derived from the registration.

The range-deflection fan is marked at hundred mil intervals with china marking pencils in such a manner that azimuths may be read directly from the fan. The hundred mil intervals are numbered so that azimuths to the left of the azimuth index are decreasing and those to the targets on the right are increasing. Since data on drift of the 40mm ammunition is not available in firing tables 40AA-A-3, it is not possible to construct an azimuth correction scale on the range-deflection fan. This introduces a small error in direction in that the error caused by drift is only compensated for at base point and check point ranges; however, the majority of indirect fire missions will be observed ones; the observer's corrections will quickly compensate for the drift factor.

A GRAPHICAL firing table is essential for speed in the determination of firing data. Firing table data is only available for the even hundred yards of range. In addition a GFT facilitates the use of the adjusted elevation derived from a precision registration. Units may improvise rough GFT scales in the field making use of the firing table data available, but accurate firing elevations are carried to the nearest tenth of mils, and this requires the use of a more refined GFT. A satisfactory graphical firing table has been developed for these weapons (Fig. 6)* by Captain B. D. More of the Gunnery Department, AA & GM Br, The Artillery School. Using this GFT, elevations can be determined with the accuracy required. Note that the value of the fork is missing from this table, and that the value of the "C" has been substituted in its place. A "C" is the change in elevation which will re-

sult in a range change of one hundred yards on the ground for a specific range, and can effectively be substituted for the fork. Note also that the GFT contains information concerning the 40mm HE-T MK 2 round and the AP-T M18 round. A hundred over R scale has also been provided along the top of the scales.

PRECISION REGISTRATIONS

THE most accurate firing data result when map data are corrected by a registration. From such a registration the corrections to be applied to map data may be determined for the targets to be engaged. Unfortunately, the probable error data for the 40mm gun are not available; hence the value of the fork is not contained in the firing tables. The lack of this information has forced the use of the value of a "C" in computing an adjusted elevation. The procedure followed to register these weapons as outlined below is a workable one which has provided accurate adjusted elevations. First the weapon that has been designated as the base piece is emplaced over the center of the position area. The observer then adjusts the base piece on the base point, and as in standard field artillery procedure, when the fire for effect phase of the precision registration is entered at the trial range, a member of the fire-direction center then takes over the control of fire and the observer then sends only his sensings of the rounds observed. Even without the probable error data, it is recommended that the trial range should be the range for the center of a 50-yard rather than a 100-yard bracket. Since it is very difficult to plot a range change of 25 yards on the target grid or the firing chart, the range change may be obtained by referring to the "C" scale on the GFT. By taking one-fourth of the value of the "C" for the last range determined and applying it algebraically to the last elevation fired, the range change of 25 yards can be obtained. This procedure is accurate only when the angle between the gun target line and the observer target line (Angle T) is less than 100 mils.

The factor S, which is the azimuth change required to keep the burst on the observer target line for a range change of 100 yards along the same line, is obtained from standard one-half S tables. Also standard sensing tables are used to

*See scale on page 56.

convert the observer's sensings to the fire-direction center sensings. When an equal number of overs and shorts are obtained during the fire for effect phase of the precision registration, the adjusted elevation is the mean elevation at which the group was fired. If an unequal number of overs and shorts resulted the following formula is applied:

$$\frac{\text{Shorts minus Overs}}{(\text{Number of rounds}) \times 2} \times \frac{1}{2} "C"$$

The result is added algebraically to the mean elevation fired to get the adjusted elevation. If however the trial range is taken as the center of a 100-yard bracket, then one "C" rather than $\frac{1}{2}$ "C" is substituted in the above formula. The adjusted azimuth is secured in the same manner as outlined in FM 6-40 or ST 44-4-3 for obtaining adjusted deflections. Also the rules of conduct of a precision registration as outlined in the above field manual must be observed when registering these weapons. The adjusted elevation derived from the precision registration is applied to the graphical firing table by placing the hairline of the GFT over the range to the base point and then drawing a line on the slide of the GFT over the adjusted elevation. Thereafter, by reading under the elevation gauge line the correct elevation for any range that is placed under the hairline can be determined. The adjusted azimuth obtained from the registration is used in the construction of the azimuth index on the firing chart.

IT is believed that the platoon headquarters will normally operate its own fire direction center; however, the fire of these weapons could be controlled by a battery or even a battalion FDC should the need arise.

The platoon FDC would include:

Assistant platoon commander (Duties of the S-3).

Combination horizontal and vertical control operator.

Computer.

Two telephone or radio operators.

Prolonged firing would require two or more shifts. Battery and battalion FDC's would require more personnel to provide computers and VCO's.

OBSERVER PROCEDURE

STANDARD field artillery observer

procedure is followed. Little difficulty has been experienced in sensing the burst of the 40mm HE-T round. The observer must realize that it is very easy to lose rounds in rolling terrain or shallow gullies; if so, the observer immediately makes a shift which should make the next burst visible. Observation can be facilitated by firing both barrels of the adjusting M1A1, or two rounds in rapid succession from the towed 40mm gun during a precision registration, or an adjustment on a point target. Two weapons should be fired during the adjustment phase of an area mission.

The observer secures faster adjustments of fire when the angle between the gun target line and the observer target line (Angle T) is small. The fire can be adjusted with reasonable speed even if the angle T is as great as 600 mils. However, the observer should be located to keep the angle T as small as possible.

RANGE LIMITS

THE maximum range obtainable with the 40mm HE-T round is dependent upon the time of burning of the tracer element in the base of the shell. When the tracer element burns out, the shell explodes. Ammunition made up with the MK11 or MK11 Mod. 2 tracer assembly with a burning time of from eight to ten seconds has an approximate range of 4,000 yards (TM 9-1901). At the Fort Bliss range (elevation 4,500 feet) a range of 4,700 yards was obtained with this ammunition. This imposes a serious limitation in many tactical situations. Selection of position area would be limited by this range restriction, as would be target area coverage. There is presently available a standard ammunition made up with the M3A1 tracer assembly that gives a maximum range of approximately 6,000 yards. This ammunition was fired at Fort Bliss with a maximum range of 7,000 yards. The increased range of this round gives greater flexibility in selection of position areas and better coverage by the weapon.

GUN CALIBRATION

FIRING Tables 40AA-A-3 do not give complete data to permit true calibration of these weapons and a compu-

tation of velocity errors. However, the shooting qualities of the weapons of a platoon or battery should be determined to minimize the errors introduced by tube wear, variation in quadrant surfaces and other factors. Initially the barrels should be calibrated by Ordnance personnel using star gauges. The tubes are then first grouped on individual M19A1 mounts, and then grouped by platoon or even battery in accordance with the percentages of wear. The velocity errors of the weapons of a platoon are then of the same approximate magnitude. To further reduce the error, the weapons of a platoon or battery, can in a sense, be calibrated by firing. First make sure that all gunners' quadrants have been checked and are indicating correct readings; next, make sure that each weapon is using ammunition of the same lot number. A base point is then selected at a range of at least 3,000 yards if ammunition with a maximum horizontal range of 4,000 yards is being used, or one at a range of 5,000 yards if the ammunition has the long burning tracer assembly. Next conduct a base point precision registration as rapidly as possible with each weapon to be calibrated and determine the adjusted elevation for each weapon. The adjusted elevations so obtained are compared and the longest shooting piece is taken as the base piece. The base piece is so selected in order that the other weapons will always add their corrections to the quadrant elevations given them. The difference in elevation required to cause each piece to shoot at the same range as the base piece is determined and recorded for future use.

The corrections thus obtained are exactly correct only for the range at which the registration was fired; however, the errors are small for ranges within transfer limits. Every effort should be made to preserve the identity of tubes which have been compared and to reserve their use for surface missions.

GUN LAYING

IT may be quite desirable at times to set the weapons on automatic fire and place 120 rounds per minute per tube on the target during fire for effect; however, experience has demonstrated that when so done the fire creeps away from the target. The weapons should be

placed on single fire and the laying checked after each round. With practice and experience the crews can develop adequate speed and accuracy in such firing. Crew practice is important. Every crewman should be able to quick-set quadrant elevation to the nearest tenth of a mil.

ADDITIONAL EQUIPMENT

THE present Tables of Equipment do not provide all of the items of equipment required for firing indirect fire missions with these weapons. For example, an aiming circle is necessary for the laying of the towed 40mm gun equipped with the M12A2 panoramic sight, and is desirable for the laying of the M19A1 equipped with an azimuth indicator. Aiming circles can also be used well in survey operations. Units engaged in this type of firing should be provided with a minimum of two aiming circles per battery. The range deflection fan of a scale of 1:25,000 is an essential item of fire-direction equipment which cannot be easily improvised in the field. Sufficient fans are needed to operate platoon, battery and even battalion fire-direction centers. Graphical firing tables must be secured for this type of firing. The paper scale is available to units through the bookstore of the AA & GM Br. of The Artillery School. These scales can be pasted on blank GFT rules and varnished over to protect their surfaces. Target grid sheets of a scale of 1:25,000 can either be improvised in the field or secured from

nearby field artillery units, as could be map needles. The M12A2 panoramic sight is in adequate supply since it is used on the 105mm howitzer; however, it has to be procured on special authority. If the panoramic sight cannot be secured by towed 40mm units, azimuth scales can be improvised on the base ring of this weapon. Accuracy in direction would be more difficult to attain with such scales, and firing would be quite slow.

Any automatic weapons unit required to employ indirect fire techniques against surface targets should be provided with this additional equipment. Such equipment should be made available to the unit during its training phases. More emphasis should be placed on the training of divisional self-propelled battalions in this type of firing.

EFFECTIVENESS

FIRING tests at Fort Bliss indicate and battle incidents in Korea have demonstrated that the 40mm HE-T shell is highly effective against personnel in the open or when protected by light cover. [See *En Route To The Yalu* by Captain George H. Worf and *With The Marines* by Captain Hal H. Rich, March-April issue. Ed.]

Indirect fire with the 40mm weapons is primarily suitable for employment against area targets. The sudden arrival of the fire without sound warning and the rapid rate of fire permit rapid and effective saturation of the area. It can also be effectively used against point

targets with forward observation.

TERRAIN APPRECIATION

THE flat trajectory of the 40mm imposes a limitation which should be well understood. However, the limitation can often be overcome through a knowledge of the trajectory and by terrain study and careful selection of position. Under battle conditions AW Officers in Korea have demonstrated resourcefulness in overcoming the limitation.

The maximum ordinate for a range of 3,000 yards is 103 feet; for a range of 6,000 yards, 1,013 feet. A hill mask close to the gun imposes an impossible situation; however, if the mask is midway between gun and target, or even closer to the target, the limitation is much less. The terrain study requires consideration of the height of both the gun position and the target and the terrain profile between the two.

These factors are compared with the trajectory. Suitable indirect fire location may be found on the flanks or to the rear. Or it may be necessary to move forward and employ direct fire.

Defiladed positions provide the crew with additional protection against enemy fire and observation—an important factor. The indirect fire can be made highly effective by suitable forward observation. Actually, in any long range firing it may be necessary to send an observer forward and employ indirect fire technique. Observation and adjustment of fire from the gun position is difficult at such ranges.



"All leaders must be made aware of the proper use of artillery and instructed in the methods of calling for artillery support. On numerous occasions in Korea, AA automatic weapons have broken up ground attacks. Training of AA AW battalions must include problems demanding such employment."—Observations From Korea, by Chief of Army Field Forces, in Report to the Army, May 1951.

KNOW YOUR SCOPES

Part I. Deflection Modulated Scopes

By Lt. Col. Leonard M. Orman, Arty.

To the user of the radar set the most important piece of his radar set is the oscilloscope. It is true that all the components of a radar set are important for if any unit should fail, the set is usually useless. However, these other components are within the province of the maintenance man. Once the set is on the air and functioning properly the operator is concerned only with the indicators.

It is therefore essential that he understand all of the capabilities and limitations of all the indicators of his set. Too often an operator will obtain all of his information from a single scope; e.g., a PPI, while he entirely neglects an "A" scope not knowing that the "A" scope can give him information about the target which he could never obtain from the PPI.

Let's examine then, the types of radar indicators in use and ascertain what they are and are not capable of.

Radar indicators were originally divided into two classes: (1) oscilloscopes and (2) meters. Meters were used principally for azimuth and elevation indication; the needle deflecting to one side when the antenna was off target. However, meters present two principal disadvantages: (1) their slowness of reaction, and (2) their inability to distinguish between multiple targets. For these reasons, meters are no longer used as radar indicators and will not be discussed here.

The cathode-ray indicators may be subdivided into two general classes. In one, termed "deflection modulated" the echo shows as a deflection in a bright line as shown in figure 1 (B). The second, termed "intensity modulated" is illustrated in figure 1 (C). In this type the echo shows as a spot on the scope. Part I of this article is concerned with the former while Part II will discuss the latter.

CAUTION: Read the article in its en-

tirety if you are interested in this subject. Much is included under the basic types of scopes which apply to more than one scope.

"A" Scope

The "A" scope was the first scope from the historical point of view. It gives only one element of data—range. It is a plot of echo amplitude as an ordinate with range as the abscissa. An example of an "A" scope with a range step is shown in figure 1 (B). The similarity should be noted between the "A" and the maintenance man's test oscilloscope. The test oscilloscope has furnished the genesis of the "A" indicator. Frequently, maintenance men use the "A" scope for an oscilloscope, especially when tuning or aligning a set. We shall not dwell on that point here for this article is addressed to the operator and not to the maintenance man.

Range is measured linearly from left to right with zero range being represented by the beginning of the sweep and the maximum range of the particular scale in use by the extreme right of the range. Ranges are usually measured in yards or in miles. Both nautical and statute miles are being used for this pur-

pose. Marker pips are usually available to assist in measuring the range. Unfortunately, the marker pips usually themselves resemble target pips. For that reason, they should be turned off during the searching phase. Some operators have found a graduated piece of scotch tape of more value than the markers. This is especially true if there is only one range scale available. However, if the scope has a choice of several range scales available, the Scotch tape is apt to prove a source of confusion.

The "A" scope is especially useful when attempting to track through "window," or other interference. Note the *break in the base line* caused by the target. This fact will often assist in picking out a true target from heavy jamming or other interference when other types of scopes will prove inoperative. Radars which have both "A" and PPI scopes will usually show the initial contact on the "A" scope before it appears on the PPI.

The "A" scope is noted for its resolving powers. This means that of several targets close together the "A" scope is best able to answer the question "How Many Are There?"

The shape of the pip as well as its size may be observed on "A" scopes. Fading or fluctuation in height are also discernible here better than on an in-

*Grateful appreciation is expressed to Prof. Alan C. Byers, of the U. of Pa., and Lt. Col. Raymond Bates, Arty, for their helpful review and criticisms of this pair of articles.

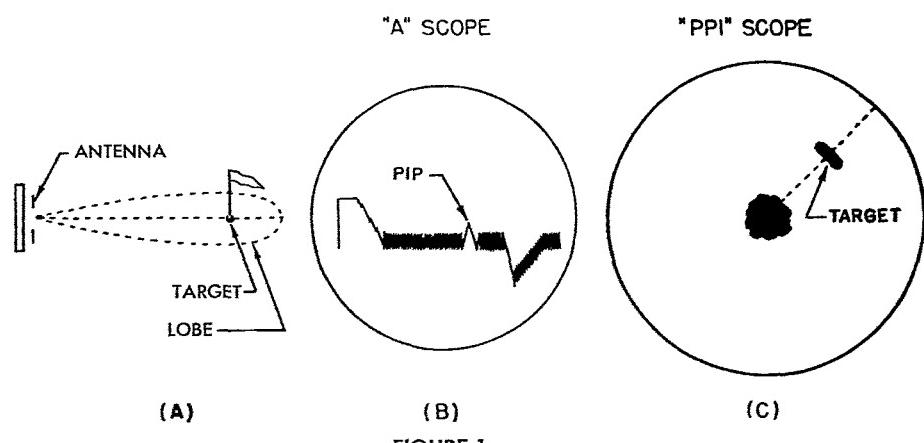


FIGURE 1

intensity modulated type. These factors, size, shape, and fading, often enable an experienced operator to determine the nature of the target. For example in a formation of many planes, the echo will spread over a long range and on an "A" scope will have many peaks.

Experience with a particular radar will soon indicate the strength of signal to be expected, at various ranges, from targets of different sizes. Variations in signal strength are characterized by the rapidity and depth of fading. Such signal changes may be studied best on an "A" scope. Ships exhibit deeply fading echoes of slow period, whereas the echo from a fast flying airplane may fluctuate so rapidly that the variation is evident merely as a shimmering of the top of the pulse. A highly characteristic beating effect is produced by "window." These effects are not nearly as apparent in intensity modulated scopes whose pips merely vary in brilliance for the above effects.

It should be remembered that the type "A" indicators reveal the range of targets only along a particular line of view, that toward which the antenna is pointing. When the antenna is rotating, searching for targets, the pips on type "A" scopes change rapidly as the line of view of the radiator passes over the field of view. Under this condition type "A" indicators give little information of value.

One-Pip Areas. The diagrams in figure 2 illustrate the fact that the azimuth and range resolution of the "A" scope are superior to those of a PPI on the same radar. The group of echoes when at long range, just fits inside the one-pip area of the PPI and as a result only one pip will be seen on that indicator (this would be as true of 300 targets, if they were disposed within the one-pip area). However, at the same time two pips will be seen on the "A" scope because the one-pip area of that scope is smaller and

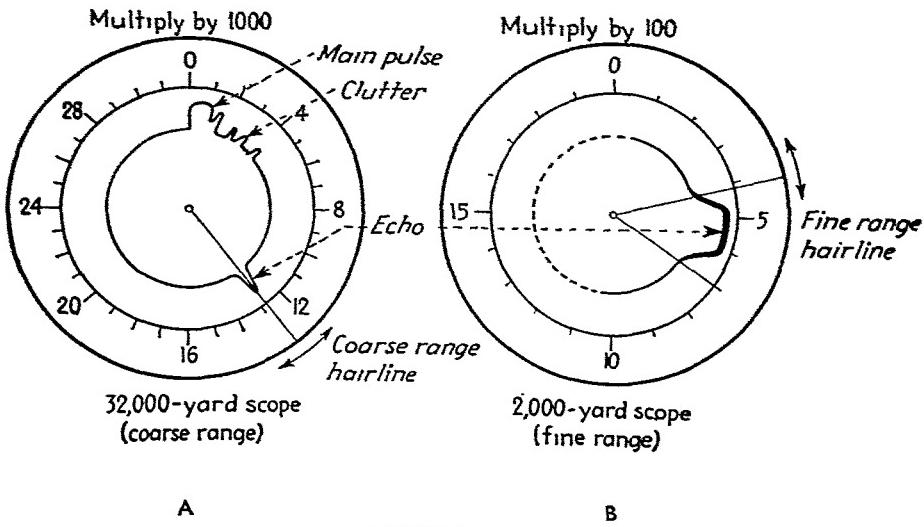


FIGURE 3

the disposition cannot be contained by it. Thus by using the "A" scope the operator knows that there are at least two targets instead of the single one shown by the PPI.

After this group of targets has closed to a shorter range, as in the illustration, all of these targets will be resolved on the "A" scope, whereas the PPI still distinguishes an incorrect number of contacts. (For a more detailed discussion of this point, see the article PIPOLOGY in the AA Journal Pamphlet *Radar*.)

Types J, K, L, M, N and R are merely modifications of the "A" scope.

"J" SCOPE

THE "J" scope (figure 3(A)) is merely a variation of an "A" scope. To obtain a longer range scale while using the same size tube, the range scale is curved around the circumference of the tube. This permits a threefold increase in scale on the same size tube. Range is measured around the circumference of the circle clockwise. The beginning of the sweep is unmistakable since as in the "A" the main transmitted pulse is here. All of the advantages possessed by the

"A" scope are inherent in the "J" scope.

Two type "J" sweeps are sometimes used in conjunction, one to show the full range, and the other (vernier scope) to show in greater detail the segment of range within which the target lies.

The appearance of the type "J" indicators used on the SCR-584 is shown in figures 3 A and B. The echo pulses are displayed as radial deflections on the circular sweeps. The coarse sweep, at the left, begins simultaneously with the transmitted pulse and continues around the circumference of the tube to give a maximum range of 32,000 yards. The fine indicator starts at the beginning of each 2,000-yard interval, but only a portion of the sweep is intensified. Over the faces of the tubes are hairlines used as pointers.

The operator turns a handwheel geared to these hairlines until the hairline on the coarse indicator lies over the target echo desired; shown in this case at a range of approximately 13,000 yards. The hairlines on the fine indicator, geared to the first through a 16:1 gear train, are positioned at either side of the echo as it appears on the fine indicator. The line sweep is brightened in the vicinity of the hairlines by the narrow gate pulse. The fine indicator shows that the range here is 410 yards, which added to the 12,000 yards on the coarse scope, gives a total range of 12,410. Note here that the range is measured to the beginning of the target and not to its center as is the common tendency among unskilled operators. Note, also, that all the figures quoted here refer to the SCR-584.

When a particular target is selected on the PPI the antenna is stopped on

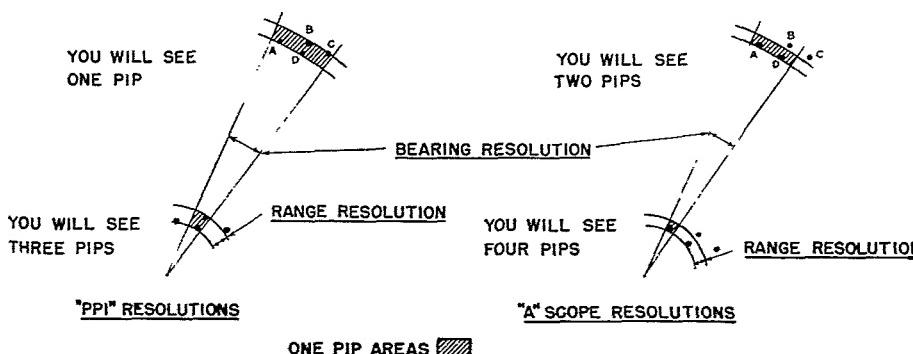


FIGURE 2

the target and the adjustable PPI range marker moved until it falls on the target's echo. This operation automatically brings the desired echo into view on the coarse and fine indicators and range is read as described above. Thereafter, the bearing of the target is followed by automatic tracking and the operator adjusts the range handwheel so as to keep the target echo between the two lines on the fine range indicator. The range is thus followed manually and the range information fed to the computer. The azimuth and elevation information is fed simultaneously from the automatic angle tracking mechanism.

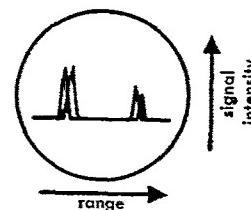
A useful auxiliary in range tracking is the aided tracking system. When this device is used, the range handwheel is turned by a motor drive at an adjustable rate. If the target happens to be approaching or receding from the radar at constant velocity, the operator is relieved of the task of following the target's echo. If the rate of approach or recession changes, the echo signal begins to drift out of the illuminated portion of the fine range scope. The operator, noting the drift, turns an auxiliary handwheel that performs two functions: it introduces a shift in position of the narrow gate sufficient to bring the sweep back to the target, and simultaneously it changes the rate of the automatic drive to make it more nearly approach the changed rate of the approach of the target. By successive motions of the aided tracking handwheel, the operator is able to follow the target smoothly and accurately.

"K" SCOPE

TYPE "K" (figure 4) is a modified "A" scope used to measure elevation or azimuth. It does this by indicating the relative strength of the two sets of pulses received in the lobe-switching system. Two sweeps are superimposed, but are slightly displaced along the length of the sweep, so that the two sets of pulses are displayed side by side. The antenna is trained in the desired dimension until the two pips are of the same height thus indicating that the antenna is on target. The elevation or azimuth is then read from a counter.

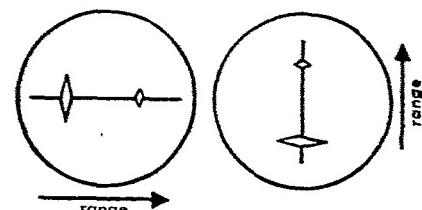
When operating with "K" scopes which measure azimuth or elevation the range operator has two responsibilities: (1) to keep the pip in the notch and (2) never let it saturate (flatten on top

type K



Type A with lobe-switching antenna.
Spread voltage splits signals from two lobes. When pips are of equal size, antenna is on target

type L



Same as type K, but signals from two lobes are placed back to back

FIGURE 4

due to too much receiver sensitivity). The pip must be kept in the center of the notch so that the pip appears even on the pointer's and trainer's scopes. If the pip saturates on the range scope, it will saturate on the trainer's and pointer's scopes, thus preventing them from knowing which way to train or elevate.

In addition to indicating the azimuth or elevation of the target, the "K" scope gives the operator a sense of direction. If the antenna is off target, the inequality of the pips shows him the direction to turn. The phrase to engrave upon the memory of the operator is *turn toward the smaller pip*. The pointer elevates if the left pip is low. A rule to follow is the *Three "L" Rule*. For the trainer: left, low, left; meaning if the left pip is low, train to the left. For the pointer: left, low, lift; meaning if the left pip is low, lift or elevate the antenna.

Some pointers think of the left pip on their scope as an indication of the position angle of the antenna. If the left pip is low in relation to the right pip, the antenna is pointed below the target. If the left pip is high the antenna is pointed above the target.

When you train or point toward the lower pip and it gets lower rather than higher, it indicates a minor lobe contact. The target is actually 15° to 20° to the left or right of this position.

"L," "M," "N," "R" SCOPES

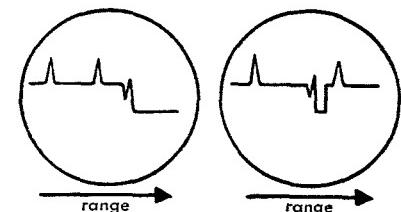
Type "L" (figure 5) is similar to type "K" except that the two sets of pulses are displayed on opposite sides of the traces and at the same position so that the range is indicated as in the type "A" scope, and the azimuth or elevation found by balancing the amplitudes. A vertical trace is used for azimuth matching, and a horizontal trace is used for elevation matching.

FIGURE 5

Type "M" (figure 6) is a conventional type "A" scope with a raised portion or step that may be positioned under the target signal of particular interest. The coincidence of the pulse and the step is adjusted by a vernier range-finding control, thereby permitting accurate determination of range.

Type "N" (figure 7) is a combination

type M



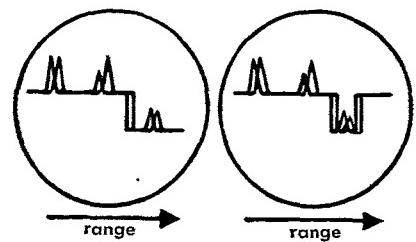
Type A with range step or range notch. When pip is aligned with step or notch, range can be read from dial or counter

FIGURE 6

of types "K" and "M."

The tendency of most operators is to favor the PPI over the "A" scope. As this article has pointed out, in some instances the deflection type scope is superior to the intensity modulated. The experienced operator will use all of his scopes to get the best results.

type N



A combination of type K and type M

FIGURE 7

Part II. Intensity Modulated Scopes

RADAR oscilloscopes can be divided into two broad categories. These are deflection-modulated (e.g. "A"-scope) and intensity-modulated (e.g. PPI). Part I of this article dealt with the first of these while this part has as its subject the second.

An echo in an intensity-modulated scope employs a television technique; instead of causing a deflection in a base line it causes a spot to brighten. The most widely used intensity-modulated scope is the PPI (Plan Position Indicator) and indeed it is the most popular of all oscilloscopes. With the nine companies manufacturing radar for commercial merchant marine use it is the only type used. The popularity of this scope for this and many other uses may be traced primarily to the pictorial display of a polar map capable of easy interpretation.

In the PPI display the time base is radial and starts from the center of the tube. The antenna is made to rotate continuously and the time base rotates in synchronism with it. As the beam comes onto a target, the spot brightens, traces a small arc of a circle and disappears again as the beam goes off the target. In this way each echo gives rise to an arc segment bright spot at the appropriate range and azimuth. In order to give a more or less permanent pattern the face of the tube is treated with a persistent material which holds the echo at least long enough for the antenna to make another revolution.

The PPI is a two-dimensional scope giving a map-like presentation throughout 360 degrees or over any smaller sector of particular interest. The PPI gives the target location in polar coordinates, the range of the target being indicated by radial distance from the center of the pattern and its azimuth being given by

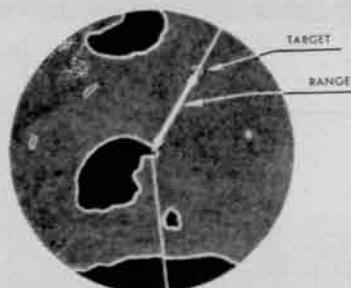


Figure 1.

reference to a fixed reference. When employed in ground based radars, the PPI is directly comparable to a map, the center of the presentation corresponding to the position of the radar on a map. In presenting the information with which it deals, its only fundamental shortcoming is that, in common with all maps and charts, it cannot simultaneously possess a highly expanded scale and a large field of view.

With intensity-modulated scopes even more than with deflection-modulated types adjustments are extremely important. It has been found that improper adjustments of controls have been responsible for relatively poor performance characteristics in the detection of small echoes at long range. Range performance on one equipment was increased 25% after proper adjustments were made.

Advantages obtained from proper adjustments are:

1. Longer ranges.
2. Lack of harsh contrasts which seem to be less fatiguing.

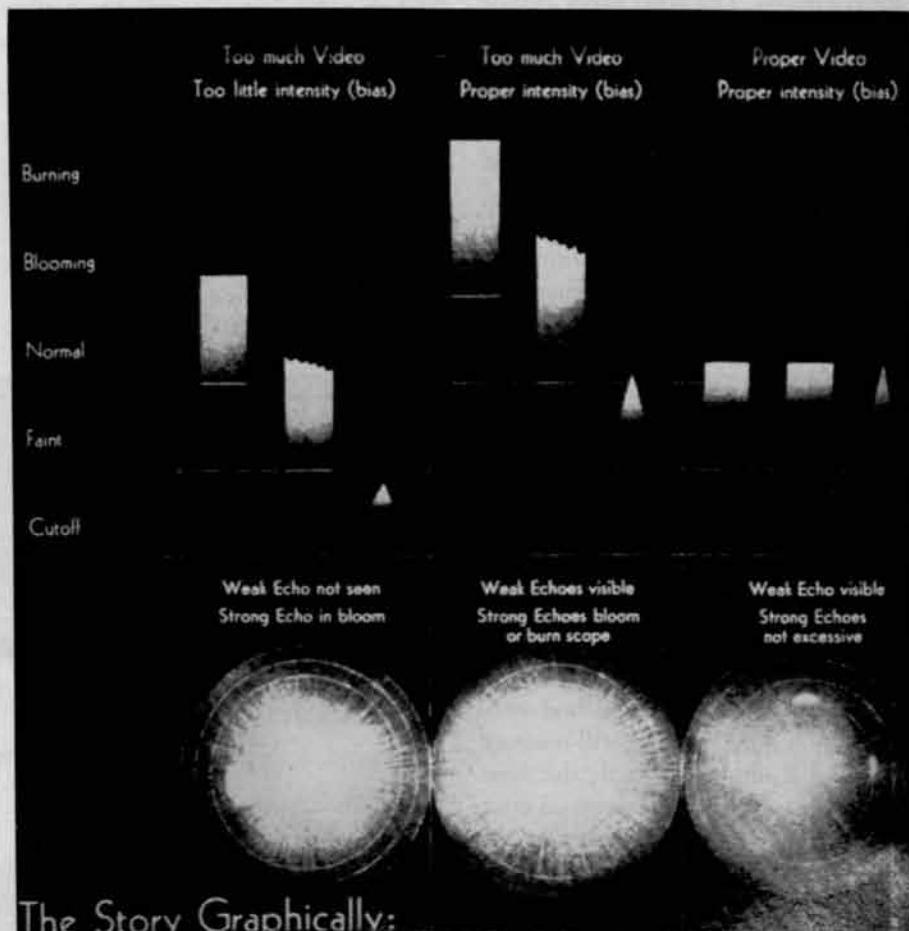
3. Better azimuth and range accuracy.
4. More uniform "snow" which is less easily confused with echoes.

In order for a PPI scope to indicate weak signals, the intensity control must be adjusted to give a faint trace when the receiver gain is at minimum and no signals are fed to the indicator. When this condition is obtained, even the weakest echo will give a visible response. At the maximum end of the intensity scale, the limiting control must be set to prevent the strong echoes from "blooming" or burning the scope.

The PPI scope is operating normally if:

- a. The PPI FOCUS control can be adjusted to obtain correct focus. FOCUS varies the sharpness of the scope pattern.
- b. The PPI INTENSITY control can be adjusted to produce a trace of proper brilliance. INTENSITY varies the background for maximum contrast.

Contrast—The contrast of the picture



The Story Graphically:

Figure 2.

depends upon several things, over most of which the operator has no control. However, he must be careful to work in a darkened cubicle as the screen material has a natural color much like that of the phosphorescent light, so that contrast is reduced by reflected light.

Resolution—As with contrast, several factors over which the operator has no control limit the resolving power of the set. The one variable with which he is concerned is the spot size as affected by the *intensity* level at which the tube is operated. Of course while a reduction in intensity aids resolution it militates against the ability of the set to pick up weak targets; hence, the operator must use judgment in manipulating these controls.

When the operator desires to change range scales these steps should be followed:

1. Change range.
2. Reduce receiver gain to minimum.
3. Adjust intensity for faint trace.
4. Adjust gain to normal.

The viewing hood should be used during the day or whenever external light is present. The hood keeps outside light away from the cathode-ray screen, enabling the operator to detect small targets. Stray light on the screen will excite the phosphorescent layer on the tube and make small echoes less visible. Using the hood makes it possible for the operator to obtain the maximum information presented. The hood is unpopular with operators who wear glasses. As an alternative, curtains may be draped around the radar console to block out extraneous light.

Measuring Range and Bearing—The range of a target appearing on a PPI scope is estimated by its relative position between two range rings. Some sets have a variable range marker whose movement is correlated with a direct range reading dial. The range marker can be moved to the target on the screen and the range can be read directly from the counters. Regardless of the method used, a properly trained operator will measure range and azimuths in exactly the same way each time so that his personal error is small and constant. As a result, the range and azimuth data obtained by a good operator will be more reliable than that obtained by the beginner. Skill and dexterity developed by constant prac-

tice enable a proficient operator to make measurements quickly.

If accurate ranging is desired, the distance from one's own position represented by the center of the PPI, to the inside edge of the target is measured. When measuring range to close targets, remember that zero distance is the outer perimeter of the small circle in the center of the PPI, not the center of this circle.

When measuring azimuth with a cursor, a substantial parallax error can be made if the operator looks from one side or the other. (See figure 3.) The habit of keeping the eye on the axis of the scope when making observation should be cultivated. Since radar antenna patterns have a finite width (usually several degrees) targets will appear as arcs. Measure azimuth to the *center* of the target under observation.

Scope Distortion—Radar, mechanically and electronically, simply cannot paint a precise picture on the scope. A certain amount of distortion is unavoidable. In a broad sense, the term distortion has come to mean all limitations to the usefulness of the scope image.

Radar Shadows—In order to visualize land as radar "sees" it, imagine a plan view from a point high in the sky above it, at about the time of sunset. The beam of light from the low sun illuminates the parts of the land that a radar on the same azimuth would "see" but, of course, there will be shadows in the hollows and behind the mountains. These same areas will be in "radar shadows" and therefore not detected by radar. Low flying planes here would also go undetected.

High land blocks the radiated energy, preventing it from striking any low points beyond. Thus, high land produces a blind zone irrespective of the resolution characteristics of the radar.

Beam-Width and Pulse-Duration Distortions—Two types of distortion are always involved in scope presentation. One is due to the diverging beam of the radar, and may be called *beam-width distortion*. The other is due to the fact that the pulse has a finite duration—from $\frac{1}{4}$ microsecond to about two microseconds, and it can be called *pulse-duration distortion*. Beam-width distortions cause all objects to appear broader than they are; that is, all contacts appear to spread to the left and right of their positions. On an airborne radar the bright returns from a river bank tend to move the banks together. The result of pulse-duration distortion is increased depth of target pips on the range axis of the scope. This effect is apparent on deflection-modulated scopes as well as on intensity-modulated types.

On an "intensity-modulated" scope an echo appears as a line or arc which is approximately equal in length to the beam width plus the target width. Thus if two targets are separated by only half of the beam width, the echoes will blend into a single bright trace. As a result, the minimum angular separation required for resolution on a type B or PPI presentation is greater than the value used for type A presentation.

OFF-CENTER PPI

The origin of the PPI may be at the center of the tube face as we have seen,

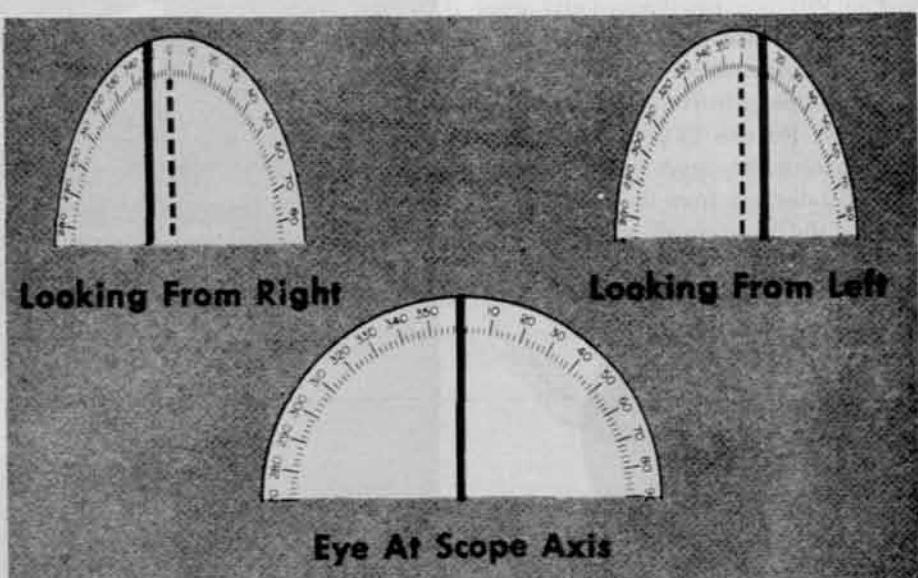


Figure 3.

giving an equal field of view in all directions. Frequently, however, it is displaced, sometimes far off the tube face, in order to give a maximum expansion to a given region; such a display is called an *off-center PPI*. The expression *sector display* is often used when the displacement is extreme. A tactical situation such as our SCR-584's faced at Antwerp with V-1's coming from a limited sector calls for this last mentioned type.

OPEN-CENTER PPI

A polar plot such as the PPI can be deformed radially by shifting the range origin. On a normal PPI it is difficult to determine accurately the direction to a target whose range is a small fraction of that covered by the display. This difficulty is overcome partly by expanding the zero-range origin of the PPI into a circle so that the radius to the echo from a nearby target is greatly increased. Such an arrangement is known as an open-center PPI. Range and bearing retain their identities and their linear scales. For the degree of center-opening ordinarily used, the deformation introduced into the sizes, shapes, and relative positions of the targets is serious for only a fractional part of the range portrayed.

Delayed PPI provides an expanded range scale over an interval at a distance from the radar without sacrificing an all-round view as an off-center PPI would do.

Stretched PPI is another deformed PPI. On such a plot, the cartesian coordinates parallel and perpendicular to the axis of stretch retain their original meaning and their linearity, but they have different scale factors. The delayed and stretched PPI's are not used in present AFF radars.

"B" SCOPE

THE second most common type of intensity-modulated scope is the "B"

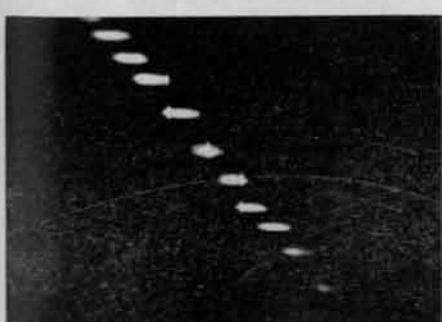


Figure 4.

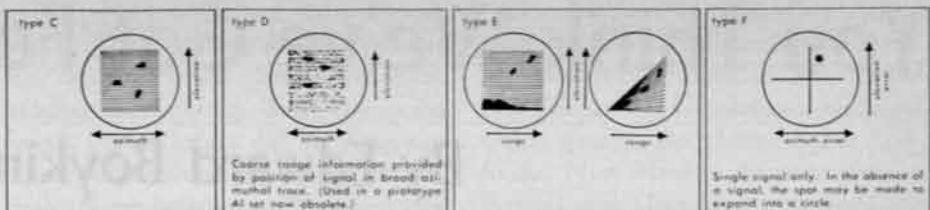


FIGURE 6

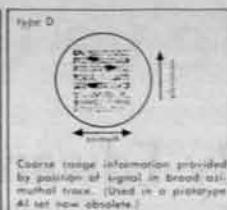


FIGURE 7

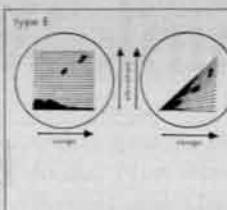


FIGURE 8

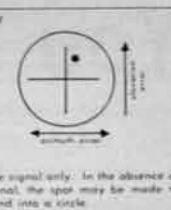


FIGURE 9

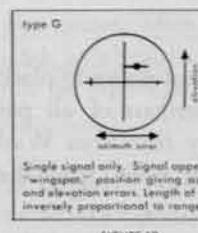


FIGURE 10

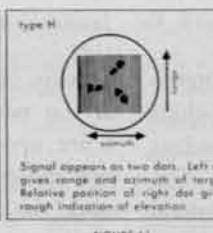


FIGURE 11



FIGURE 12

scope. It supplies the same elements of information as the PPI but gives it in rectangular coordinates. Range is measured from the bottom of the scope as zero to the maximum range at the top. Azimuth is measured from left and right at the center line. An excessive shape distortion occurs if the B scope is used to cover too large an area. This type of distortion is readily understood by anyone familiar with various map projections. This difficulty is usually overcome by using a Micro-B scope; i.e., one which covers only a small portion of the area under surveillance. For example, the "B" scope used on the AN/MPG-1 covers 2,000 yards in range and 10° in azi-

imuth. Within these limits the amount of distortion is easily tolerated.

Other types of deflection-modulated scopes in use are "C" (azimuth and elevation), "D" (coarse range, azimuth and elevation), "E" (range and elevation), "F" (azimuth error and range error), "G" (azimuth error, elevation error with an extremely coarse range indicator), "H" (range and azimuth), "I" (range and azimuth using a conical antenna scan). These types are not found in current AFF sets.

Conclusion—An attempt has been made here to describe and delineate the various types of cathode-ray oscilloscopes in use today in AFF sets. The strong points of each have been related. All scopes have uses and do some things better than other types. Because of the ease of understanding the PPI it has been somewhat oversold and consequently deflection-modulated scopes have been undersold. The user of radar who aspires to milk it of all the information that is there must—must know and use *all* of his scopes.

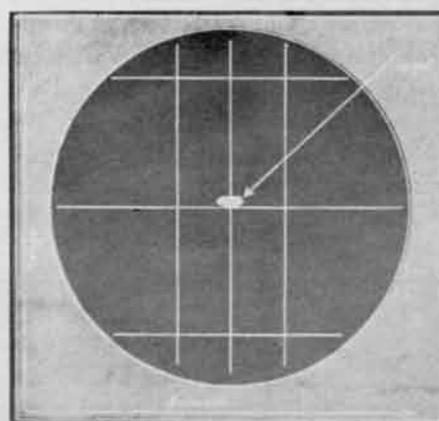


Figure 5. An example of the "B" Scope, similar to that of the AN/MPG-1. The horizontal lines represent, from top to bottom, +1000 yards, zero range, and -1000 yards. The vertical lines indicate 5° left, 0°, 5° right.

Figure 5.

FOOTNOTE: For additional information on this subject the reader is referred to the articles "Pipology" and "Training of Radar Operators" by the same author in the AA Journal Pamphlet *Radar*. 25 cents.

PPI	Intensity Modulated	Deflector Modulated	Range	Azimuth	Elevation	Search	Fire Control	Variation of A
A								
B								
J								
K								
R	X	X					X	X

On the table above the correct checks for the "R" scope have been filled in. Do likewise for the other types.

You Think We've Got Feuds Today?

By Edward Boykin

IT was 3,000 miles from Washington to Jalapa, Mexico—less than one-third the distance to Tokyo—and President James K. Polk was hopping mad. The object of his ire was Maj. Gen. Winfield Scott, commanding an American army advancing into the heart of Mexico.

Just as now—with Gen. MacArthur and the administration tiffing over the question of who is to carry the ball—so it was in 1847. Only more so. Much more.

The rift between Scott and the administration began with the American declaration of war on May 13, 1846. Reluctantly, Polk had given Scott the supreme command, "though," he confided to his diary and to Secretary of War Marcy, "I did not consider him suited to such an important command."

Scott, however, was clearly the ranking American general. He was 60 years old, a veteran of the War of 1812, a picturesque public figure for forty years and something of a politician on the Whig side.

On May 19, without consulting his General in Chief, Polk asked Congress to create two new major generals and several brigadiers. On the surface he was dissatisfied because Scott had not dashed off to the scene of war on the Rio Grande. He wanted a major general on tap to supersede Scott, if the latter delayed too long in getting himself into action. A deeper consideration was Scott's Whig affiliation. The same applied to Zachary Taylor who, pending Scott's arrival, commanded the army of occupation on the Rio Grande. There must be a few Democrat generals put in a position to gather war laurels.

When Scott heard what Polk had done, he boiled over. To Secretary of War Marcy he wrote a sizzling letter, which was rushed to the President. If that was the way they wanted to run the war, Scott said, he would prefer to have someone else command the army against

Mexico. "I do not desire to place myself in the most perilous of all positions—a fire upon my rear from Washington and the fire, in front, from the Mexicans," he said.

The President fired back by taking Scott at his word and ordering him to prosecute the war from a desk in Washington. Thoroughly rebuffed, Scott sent an apology and accepted the President's mandate. He began this historic epistle with this sentence: "Your letter of this date, received as I sat down to take a hasty plate of soup, demands a prompt reply." A Washington diplomat promptly dubbed Scott "Marshal Turenne." This letter was to dog Scott for the rest of his days.

* * *

THE war dragged on through the summer, and by September President Polk and his cabinet became convinced that victory could not be won in Northern Mexico. The capture of Vera Cruz was decided on as the next move. Picking a general to command this new expedition was a problem; Polk promptly passed up Taylor, who was already eyeing the presidency in 1848. The grudging choice fell on Scott.

The President and his general parted on the best of terms, but hardly was Scott out of Washington before Polk

asked Congress to appoint a lieutenant general to be superior to both Scott and Taylor. The new appointee was to take over after Scott captured Vera Cruz. When Scott heard of the plan to outrank him, he characterized Polk as "an enemy more to be dreaded than Santa Anna, the Mexican commander, and all his hosts." But the Senate came to Scott's rescue by blocking Polk's request.

At New Orleans, as Scott passed through, somebody blabbed the top-secret invasion plan to a newspaper, thus tipping Mexico off to what was coming. When the President heard about it he charged that Scott's "inordinate vanity" had led him to babble. Scott replied to Polk's jab by telling a group of his officers, "I am entering upon this campaign with a halter around my neck. The end of it is at Washington, and they are ruthless executioners."

On April 10, 1847, Scott's dispatch announcing the capture of Vera Cruz reached the President, who determined to bring the war to a quick end. He immediately dispatched to Mexico, armed with plenipotentiary power, one Nicholas P. Trist, chief clerk of the State Department. Never in American history was a clerk invested with such authority. He lacked only one power: He must not sign a treaty. But he was to do all the negotiating and make a deal with Mexico involving the transfer of an empire



General Douglas MacArthur.



General Winfield Scott.

*Reprinted with permission from the Washington *The Evening Star*, April 4, 1951.

to the United States.

Traveling incognito, much inflated by his commission, Trist set out for Scott's headquarters at Japala. His trip was a deep secret for five days—until the New York *Herald* published the whole story. By the time he reached Vera Cruz, Trist's self-importance knew no bounds. He was "the government in Mexico." He sent a letter to Scott informing the general that he, Trist, had arrived, to arrange for a truce and negotiate peace with Mexico. It was Scott's first inkling of Trist's existence. He exploded in all directions. He told Trist that he would not permit the administration to degrade him, the commander of the army, by requiring him to defer to a clerk. He also dashed off a hot letter to the Secretary of War expressing his opinion of the administration. When Scott's defiant blast reached Washington on June 12, President Polk threatened to recall the general and have him court-martialed.

Strangely enough, after bickering for

several weeks, Scott and Trist became friends. They set about to finish the war and write a peace themselves. Scott handled the fighting; Trist, the peace moves. Never before did an American military-diplomatic team function so perfectly. Never before was a President kept so much in the dark. Scott and Trist granted two truces. They even invested \$10,000 cash in a fruitless effort to buy peace from the Mexican Congress.

IN Washington, Polk gnashed his teeth over Scott's "vanity" and "insubordination." While he fumed, Scott's campaign culminated in the capture of Mexico City on September 14, 1847. Next day, exasperated with Trist for sharing "Scott's hatred of the administration," the President recalled his plenipotentiary. But Trist refused to be recalled. He ignored Polk's order and proceeded, with Scott's advice, to negotiate a peace treaty.

On February 2, 1848, Trist, acting without authority and in defiance of the administration, concluded and signed the Treaty of Guadalupe Hidalgo, which gave to the United States California, New Mexico, Arizona, parts of Nevada and Utah, and recognized the Rio Grande as the southern boundary of Texas. It was the second greatest acquisition of territory in our history.

Polk, however, had the last word in his feud with Winfield Scott. On January 2, 1848, he had relieved the general of his command and ordered him before a court of inquiry on trivial charges brought by a jealous subordinate. The charges came to naught. It was the administration's last petty move in its war on a soldier who deserved, for his services, a better reward.

As then-Captain Robert E. Lee expressed it: Scott had performed his task, and was now "turned out as an old horse, to die."



109th AAA BRIGADE PROVIDES HONOR GUARD



General MacArthur pauses to greet Brigadier General Julius Klein of the 109th AAA Brigade, during his Chicago visit.

A Military Man Looks At The American Ideal*

By Brig. Gen. David A. D. Ogden

EDITOR'S NOTE—Occasionally *Armed Force* comes across an article or a speech by a military man, of such outstanding content, and import that it warrants more widespread dissemination. Such was the address given recently by Brig. General David A. D. Ogden *** to a group of High School Principals of Georgia. *** Its truths are so basic, and so self-evident, that the editors felt they could be addressed profitably to a wider audience. A sidelight of the occasion was that General Ogden threw away the manuscript that had been prepared for delivery, and spoke "off the cuff"—and, as will be apparent, from the heart. ***

like to call the "Ideal of America." Let me recite two incidents that illustrate what I mean.

The first was in the month of November 1941. The scene was Dutch Guiana on the northern coast of South America. As you know, almost all of the bauxite from which we make aluminum comes from this small colony. It is known also by the natives as Surinam.

After the fall of Holland in 1940, the Dutch Army ceased to exist and the bauxite mines of Surinam were left without any effective defending forces. From them we expected to draw the raw material from which all of our Air Force would be built. This condition led to conversations between our State Department and the fugitive Government of Holland.

Finally, in this month, the Queen consented that protection of the bauxite

mines of Surinam would be furnished by American troops.

I was sent as the advance agent of the U. S. Army to the capital, Paramaribo, to interview the Governor and make arrangements for the troops' arrival. The Governor himself had just received word from his Queen that this event would happen. He said, "I am shocked. This is a Dutch colony. I do not know what to make of its occupation by American troops. I do not know what the reaction of my people will be. However, the Queen has ordered it and so it will be. But I beg of you, let us effect the arrival of the troops with as little publicity as possible." That we agreed to. We made a plan.

The plan was that the transports carrying the troops would come to anchor off the mouth of the river upon which the city is located and the troops would be

NEARLY thirty-five years ago, I began the life of a professional soldier. I elected the Engineering profession. I have been half engineer and half soldier. I have seen two wars. Nearly twenty years of that time have been engaged in war and warlike activities.

I have reached the time of life where I feel that I can look backward as well as forward and begin to figure out what it all means. It is quite clear that there is something more to soldiering than just obeying orders and getting done the tasks assigned you to do.

Through the kaleidoscopic scenes of history, come men who rise and fall and come and go, and there is a continuous thread of something that makes sense—and the thread is spiritual and emotional. It is the *reality* and the other things are transitory. The reality I would



One of a thousand Korean children evacuated by the Air Force from Seoul, an orphan tottles aboard a C-54.

*Reprinted with permission from *Armed Force*, 14 April 1951.

Brig. Gen. Ogden, Chief, OST Division, Office of Assistant Chief of Staff, G-3, Department of the Army.

transferred to the smaller ships that brought them to the city so as to arrive at the city wharves at midnight. Street lights would be turned off, the troops would form up on the wharf as silently as possible and then march down the main street to the railroad at the far end where a train would be waiting to carry them to the positions that we had selected. The people of Paramaribo would be presented in the morning with an accomplished fact.

It turned out about as we had planned. We brought the ships to the wharf at midnight. It was quite dark but there was a pale moonlight. They formed up on the wharf with no unusual noise—but when they commenced marching down that long, dusty street in the dim light, it became apparent that something we had not anticipated was happening, for the broad sidewalks that lay in the shadows of the buildings on both sides of the street were packed with silent, waiting people.

At first there was a murmur—then a buzz—and then, a *wild* burst of applause and our troops were marching down between two banks of madly cheering people!

In some way the word had spread around, and from the plantations, from the country, from the upper reaches of the rivers where the wild bush Negroes live, from the Indian tribes in the rain forests back in the hills, the people had come down to await an event. The event was not the arrival of the troops themselves, but the arrival of America, defender of free people.

THE second incident occurred in June 1945 on the island of Borneo in the East Indies.

The Japanese Army had been substantially defeated. Its Navy was gone from the seas; its Air Force was no longer in the air; but there were large fragments of its Army scattered through the islands which they had occupied—and Borneo was one of them.

Borneo is a very large island. It is nearly 1,000 miles long, almost the size of a continent. The works of man, rubber plantations and oil fields, appear only on its fringe. The interior is inhabited by a free people called Dyaks, who still live under very primitive conditions, using bows and arrows, blow-

guns and the like. The workers of the plantations and the oil fields are not natives of the island. They come from Malaya, China, Java and India. They are not free people.

My unit, which was an amphibious one (we operated landing craft for movement by water), was assigned to support the Australian divisions who were to mop up the island of Borneo. We moved fast and we moved far. We penetrated almost every river on that coast as far as they were navigable, with small craft, many miles into the interior. We were greeted with apathy by the imported workers of the plantations and oil fields but when we came to the villages of the Dyaks, the free people of the interior, we were greeted with enthusiasm and with cheers. They knew we were coming. They were on the banks, at the villages where we passed. They cheered not the troops in the boats, but the flag of the United States that flew on the stern of every craft! It was the same thing that made them cheer as made those people cheer on the streets of Paramaribo—the “Ideal of America,” champion of free peoples everywhere.

T

HESE are but events, but in the period of an active life, men rise and fall and there is a difference between men too. Let me tell you about two of them that illustrate that difference.

The first man was not one of the good ones, although he had been an officer in World War I. He worked for me on a construction job in the paymaster's department. He was found guilty of taking checks which did not belong to him and converting them to his own use. When he found out what the consequences of that discovery were, he killed himself, leaving behind him nothing but a painful memory and a wife and children destitute and disgraced.

Now, that man was a coward. He was a coward for taking the money in the first place when he knew he shouldn't.

He was a fool for gambling with the future of his wife and children.

He was a coward for not facing the consequences when he was caught.

He had no ideals. He lived for nothing except the satisfaction of his own desires. Let him remain anonymous.

But I would like to tell you of another man whose name I am proud to

give you. His name was Junior Van Noy. I call him a man although he was but eighteen years old.

Van Noy was a machine-gunner on a beach at Finschhafen, New Guinea.

Our forces and the Australians had just made a successful landing against the Japanese forces at this point although we were heavily outnumbered. The Japs had calculated that the best way to get rid of us was to make a counter landing against our beachhead and for that purpose, they loaded up four landing craft with thirty-five men each. Each landing craft mounted two machine guns.

In the dark of night, just before dawn, they coasted down the shore, out to sea a mile or so and, then, at the place where Van Noy was stationed on that beach, they turned in and headed for the shore with muted motors.

There were other men in that beach position besides Van Noy—perhaps a dozen of them. The motors were not entirely silent so that our men became aware that something was about to happen. The other men prudently withdrew into the jungles—or perhaps they went to get their rifles—but Van Noy had been told that his gun was the pivot of that perimeter defense on the beach and he was to hold it and he was *going to hold it*. He did not withdraw.

Now, you couldn't shoot holes in the side of a Jap landing craft with a .30-caliber machine gun for they are made of stout timber. In the front is also a stout wooden ramp which you would have difficulty shooting through—but Van Noy knew something. He knew that when the Japs make a landing, they drop their ramps just before they hit the shore. So, he held his fire until they dropped their ramps, 25 yards from the beach, and then he let them have it!

One gun against eight—one man against 150.

He wiped out the contents of two boats but the other two effected a landing and Van Noy had to take care of them after they got ashore.

The last man killed him with a grenade as he fell just 10 yards from the muzzle of that gun. . . .

We picked Van Noy up off the beach later on that morning—dead—his finger on the trigger, his last round fired, mission accomplished.

NOW there is a difference between those two men. One of them was a hero and the Congress said he was, for they gave him the Medal of Honor.

But what makes the difference? They are both dead.

One man lived for something—he believed in something and what he believed in and what he lived for was more precious to him than life itself. It is the knowledge of the "Ideal of America" which will generate in our young men a willingness to "hold when all is gone except the will which says 'hold on.'"

It is not limited to individuals. You will also find it in organizations. It makes the difference between victory and defeat.

I recall a very gallant division with which I served frequently throughout the southwest Pacific campaigns. It was the first to fight at Buna in the summer of 1942. It fought all through the campaigns for the next three years, spending 620 days—almost two years—in battle, and suffered grievous losses. I accompanied it to the occupation of Japan and assisted in demobilizing it in January 1946. It was still at the same strength that it had when it entered the battle of Buna (14,053) and it was still a gallant division—the equal of any—but there was *only one man* in it who had fought in the battle of Buna. It was a gallant division *right down to the very last man!*

It was the same thing that made it a gallant division that made a hero out of Van Noy.

It is the *knowledge* of our ideals that makes us bold and makes us strong.

America can never be defended except through boldness and through strength.

You ask me what the high schools can do to help our country?

Give us more men like Van Noy!

Give us men who know what the ideal of America is!

ARE we sure we know just what it is? I would like to define it for you as I see it.

In the early 1600's there came to the new continent of America, many groups of people from various parts of the Old World to establish a new nation. They came because they were dissatisfied with conditions in the Old World. In 1776

these people finally threw off the last domination of the Old World and definitely established a new nation based upon new principles which are these:

Equal opportunity for all.

The new nation and its government would satisfy the normal hungers of men—

The hunger for truth—you can speak the truth in America and you will never be penalized for it. You can write it in your newspapers and books and say it over the radio. There are a great many places in the world where that cannot be done.

The hunger for education—that hunger exists in every man. Education is free for all in this country and a man can have just as much of it as he is willing to work to get, and it is good education. It makes for national progress—shared by all. In how many other countries of the world today can you have that?

There is also a hunger for freedom—we want to be able to live our lives in our own way and do as we please; bring up our children as we choose; and, worship as we choose. There are not many other countries where you can do that, and their number is becoming less.

The hunger for decency—we insist upon decent conduct by everyone in this country. It is a well-established principle with us that the moral law of God is superior to that of the state. There is no law here that can make a man commit a crime. Every child is expected to honor his father and his mother. That is the law of the land as well as the commandment of God. Archbishop Stepanic and Cardinal Mindszenty rot in prison today because they would not agree that the church would be the creature of the state and I hope they are men enough to lie there and rot until they die rather than admit it! But they wouldn't have to do that in this country.

The hunger for ownership—everyone here, who is reasonably provident, may own something. It may be a farm, it may be a home or a business, or perhaps just an automobile or an airplane, but the law will protect you in your ownership and what you own will not be taken from you for captious reasons. You couldn't be sure of that in many places today. . . .

Those things are the "Ideals of America" and it is what America means to many people outside of our borders.

WE boast of ourselves as being lovers of peace but our history has not been one of unbroken peace, for again and again we have arisen to fight against encroachment upon these ideals.

We have always fought for an ideal. Sometimes the allies of one war have been the enemies of another and vice-versa but the idea against which we fought was always the same. The *real* conflict has been between the ideal and an idea. The *ideal* is government "of the people, for the people, by the people." The *idea* is government of the many, by the few; the thought that directed power can overcome all principle.

AS long as there are evil men in the world, we shall probably have to fight to defend these principles. The faith that principle will triumph over force is the "Ideal of America." It is the magic force which liberates men's minds, survives all defeats, and penetrates to the farthest corners of the earth—to that dusty street in Paramaribo, to the inner fastnesses of the island of Borneo—that was what survived in Van Noy and in the 32nd Division, a gallant, fighting division, and *down to the very last man*.

America, in the eyes of the common people of the world, is almost the sole defender of that faith.

We have always won military victories but we have not always achieved our objectives.

We fought World War I to make the world safe for democracy, but we did not achieve it, for democratic government was in greater peril after victory than before. We failed to achieve our ideals because we failed to establish the rule of justice and enforced law, which was necessary to its security.

Because of our military weakness, we compromised with naked power. We faltered in the maintenance of our principles and because of that weakness, we found ourselves faced with World War II—to fight the same enemy, even with some of our former allies over the same issues.

America must be strong as well as virtuous!

WE won World War II—a war to end all wars—and we didn't repeat the same mistake we made after World War I because we established a rule of jus-

tice and of law capable of enforcement. But—we made another mistake.

We failed to distinguish between the true and false—we failed to realize that one of our powerful allies was fighting against the very thing we were fighting for—we failed to realize that we had nothing in common with that ally except the common scoundrel that attacked us both at the same time.

Shall we again compromise with

naked power?

Shall we falter in the maintenance of our principles?

We have in our hands as a weapon today, the faith of the common people of all nations that we will fight for those principles to the last cartridge and the last man. If they believe it, we can count on faithful allies among nations and we can survive. If we betray that faith, we shall stand alone and friendless.

Principals of the high schools of Georgia, you ask what you can do for your country . . . you can do a great deal.

Teach the young men to distinguish between the true and the false.

Teach them the true facts of history.

Teach them the "Ideal of America" and what it means to them and to their children, and to their children's children—

Out of that stuff, heroes are made!



Army AAA Command

THE Army Antiaircraft Command under Major General Willard W. Irvine recently took over active command of Army air defense troops in the states. This command is a part of the air defense system headed up by Lieut. Gen. Ennis C. Whitehead. General Whitehead commands the Air Defense Force, located at Ent Air Force Base, Colorado Springs, Colorado.

Headquarters of the Army AAA Command is now also located at Ent Air Force Base. Colonel Evans R. Crowell is the deputy commander. Other key members of the staff include Colonels Lemar C. Ratcliffe, Ernest L. Bush; Lieut. Cols. Robert S. Ballagh, Guy L. Campbell, Frank A. de Latour, Donald B. McGrath, Wm. O. Quirey, and John E. Wood, Jr.

As a major element of General Irvine's command, Major General Paul W. Rutledge's Eastern Army AAA Command also took over command of the troops in the Eastern Area. His command operates under the operational control of the Eastern Air Defense Force, located at Stewart AF Base, Newburgh, N. Y. General Rutledge's headquarters is located nearby in Middletown, N. Y. Colonel Arthur H. Bender is the Executive. Colonel Richard H. Comstock is chief of the

plans group and Lieut. Col. Harry Hewitt is S3.

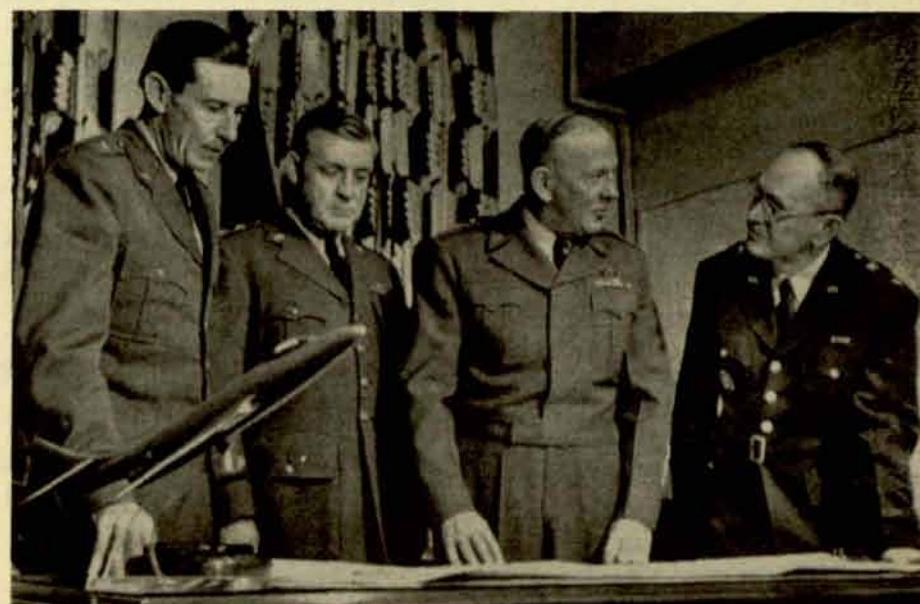
Brig. Gen. Robert W. Berry, Western Army AAA Command, took command of the troops in the Western Area. His headquarters functions under the operational control of the Western Air Defense Force. Both headquarters are located at Hamilton AF Base in California.

Colonel Donald J. Bailey has served as the executive of General Berry's com-

mand. Other key staff members include Colonel Walter H. Murray and Colonel Robert W. Hain, en route to join from the 15th AAA AW Battalion in Korea.

Colonel Bailey leaves soon to command the Central Army AAA Command which is scheduled for early activation.

The Army troops involved will continue to be served administratively and logistically by the respective Army commanders.



Air Defense Force commander Lieut. Gen. Whitehead confers with his deputies: Generals Meyer and Thatcher (left), and Irvine (right).

News and Comment

Canal Zone Test of Civilian Antiaircraft Auxiliary

The Panama Canal Zone will become the proving ground for a test of plans by the United States Army for integration of volunteer civilians into its antiaircraft program.

The test will be designed to set the pattern for ultimate coordination of Army and civilian auxiliary efforts in defense against air attack on the United States and its possessions. Present plans envision civilians and soldiers working side by side in all capacities, from operations rooms to gun sites.

The decision to conduct the test and selection of the Canal Zone as its locale are the outgrowth of extensive studies by the Army.

If proven successful, the plan would provide for the creation of a trained and prepared civilian reserve which could move into action alongside Army personnel in an air defense role. The integrated groups would permit an increase in the number of antiaircraft weapons which could be put into operation by a given number of Army personnel.

In announcing the revolutionary program, Secretary of the Army Frank Pace, Jr., said:

"I have agreed that this highly important test should be conducted in the Canal Zone, utilizing U. S. Army Caribbean troops and a selected number of volunteers from the United States civilians residing in the Canal Zone.

"One of the major factors that prompted the selection of the Canal Zone as the site for this test was that United States civilians residing in the Canal Zone are representative of the United States public in morale, loyalty and spirit of cooperation. I am confident that they will cooperate in this test which will establish goals and standards for the use of civilians in the United States 'Antiaircraft Program.'"

Both men and women civilian volunteers will take part in the test of personnel aspects of the antiaircraft system, including the AAA operations room, the

AAA intelligence system, command posts and the gun sites.

The Canal Zone offers a complete antiaircraft installation, including permanent operations rooms, complete communications facilities, firing ranges, and developed tactical sites. In addition, there is a Joint Operations Center and an Aircraft Control and Warning Center in the area.

Major General Ray E. Porter, Commanding General, U. S. Army Caribbean, will conduct the test in cooperation with Brigadier General Francis K. Newcomer, Governor of the Panama Canal.

To coordinate various aspects of the test, a team of Army General Staff officers was sent to the Canal Zone recently. The team included Colonel R. E. Hattan, Lieut. Colonels Henry P. Van Ormer, W. J. Bryden, C. E. Jennessen, Jr., and G. W. Pervier.

Colonel Sanford J. Goodman, commanding 65th AAA Group, is the Canal Zone antiaircraft commander.

228th AAA Group To Ft. Custer

The 228th AAA Group, under Colonel D. W. Bethea, has moved from Camp Edwards, Mass. where they had been training since ordered into Federal Service, to Fort Custer, Michigan. The Group is a unit of the South Carolina National Guard.

260th AAA Gun Bn. To Stewart

The recently Federalized 260th AAA Gun Battalion of the D. C. National Guard have left their armory in the Nation's Capital and moved to Camp Stewart, Georgia. Lt. Col. Richard Stevens commands the unit.

All officers, including the chaplain, served in World War II. Approximately forty per cent of the enlisted personnel are also veterans.

710th AAA Gun Bn. At Ft. Myer

Under command of Lt. Col. Charles C. Berkeley of Hampton, Va., the 710th

AAA Gun Battalion of the Virginia National Guard arrived at Fort Myer recently, having completed its mobilization training program at Camp Stewart, Ga.

The unit was ordered into Federal service in August 1950. It was the first combat unit of the Guard to be reactivated in Virginia at the close of World War II; its organizations come from Alexandria, Hampton, Newport News and Williamsburg.

The Best of Many Such Letters!

To the Editor:

Enclosed find money orders to cover subscription for each of the seventy men listed from this battery. Note that some wish it sent to Stateside addresses.

This makes 56 per cent of the battery.

Clarence L. Guffy,
1st Lt. Comdg.

Btry B, 15th AAA AW Bn (SP)
7th Division, APO 7

And this . . .

Brig. Gen. William S. Lawton, Chief of Staff, Army Field Forces, writes " . . . the stories from Korea have been most educational. It is remarkable to me, how the authors find time to put out such good stuff."

Our hats off to our splendid group of combat reporters in Korea who are making the Journal a source of interest and pride to their comrades in arms.
—Ed.

For A Combat Artillery Badge

To The Editor:

I heartily agree with Colonel Hain, in the March-April issue, that certain personnel of the AAA AW (SP) battalions should be awarded the Combat Artillery Badge.

This battalion has been in close and continuous support of the infantry for ninety days. During this time they have been on line with, or ahead of the infantry continuously and have shared all their hardships and danger.

We have inflicted over 5,500 casualties on the enemy, 5,100 of which were killed, and have taken 41 prisoners. These figures are certified to by the infantry and are actual count. In addition, we have suffered 67 casualties, mostly from small-arms fire. Seven of these casualties were officers.

The infantry regiments whom we have supported have on several occasions

expressed desires to award us the Combat Infantry Badge but can't do so because of the regulation governing this.

Ask any doughboy in this division who their best friend is and they'll tell you "The Triple A."

CHARLES E. HENRY,
Lt. Col., Arty.

21st AAA AW Battalion (SP)
Korea.

To The Editor:

I read with interest your articles pertaining to the activities of the 15th and 82nd AAA AW Battalions (SP).

As a former member of both units, my hat goes off to the officers and men of these two fine outfits.

SEYMOUR D. KING,
WOJG, USA.

Germany.

To The Editor:

One article in the January-February issue of the JOURNAL has been designated as must reading for all officers of this command. It is the one by Major John B. B. Trussell, Jr., "Some Tips For Junior Staff Officers."

My personal opinion is that this issue of the JOURNAL is one of the best for cover to cover reading published in a long time.

JOHN K. FREI,
Major, Arty, Adjutant.

10th AAA Group,
Korea.

To The Editor:

Orientation By Backsighting in the November-December issue is thought provoking.

It would be difficult to justify a 2,000-yard slash of jungle so that a distant point method could be used. However, it would be equally difficult to justify the improper placement of guns so as to accommodate for backsighting.

In throwing out the celestial method saying, "the poorest of all," Captain Genero must have assumed that the star was moving with ram jet action. Also, he disregards entirely the use of our moon except when it is dipping water.

It is entirely possible that backsighting is the best method for some particular situation, and likewise one of the other methods might be superior for some other situation.

If you have received other letters regarding this discussion or perhaps know the reaction of the AA School to this article, it would be interesting to be informed concerning them.

Our JOURNAL is a fine one. Congratulations.

JASON E. BOYNTON,
Major, Artillery.
Laconia, New Hampshire.

The backsighting method of orientation came to prominence in World War II for battle positions where visible distant points were not available. This method does require a clear line of sight between the director and the bore at each gun and this has to be anticipated, but it seldom necessitates improper placement of the guns.

Celestial orientation eliminates parallax computation, but there is some difficulty in aiming both the director and the gun simultaneously on the same point of the same celestial body. The moon is not considered very suitable.

Late in World War II the AAA School was the foremost exponent of backsighting. The School now teaches all three methods as applicable and equally effective. (Reference: Par. 230, FM 44-4, Nov. 1950.)—ED.

To the Editor:

* * *

Incidentally, the AA JOURNAL is enjoyed very much by members of this unit. It is a valuable aid in training, and the articles on SP weapons in Korea particularly enlightening and very sobering. Please continue them.

JAMES E. RUNK
1st Lt., Arty, Comd.
Btry A, 899th AAA AW Bn (SP)
Camp Atterbury, Ind.

On AW Training and Employment

To the Editor:

The AAA self-propelled AW Battalion was almost forgotten after World War II, but it is back in demand now. Now in this period of mobilization it seems to me that we are lacking in training knowledge. Of course, the battalion commander has to make up the complete training plan. For gun drill in the battalion it is preferable to have the batteries select all their section sergeants and give them intensive drill all day for

two weeks under selected officers and platoon sergeants. Let the other officers and corporals handle the battery during this time. Then turn the section sergeants loose to train the sections. In a month's time you have a well trained battalion; everybody knows the gun drill, including the officers.

The AAA self-propelled AW Battalion has a new job in combat—that of supporting the infantry. The section sergeant should be instructed in the difference between a section sergeant and a section leader; the latter is the capacity they will have to fulfill in support of the infantry. They maintain the contact with the infantry commander and do a lot of planning and reconnoitering. On reconnaissance the main job is to pick out a first position and an alternate position. Both should have the same field of fire, an approaching route, and an escape route. The alternate position is picked in case the enemy starts firing on the first position. "Two positions are also prepared in the defensive in case the enemy takes pictures of your mission."

The instant our friendly troops jump off, the automatic weapons should start "cross fire," picking out everything that might cover or conceal the enemy; they should keep on firing until their fire is masked by our own infantry advance. This tends to break the enemy's morale and to boost our own. Having done all this firing, the section leader should have made arrangements to have had ammunition brought to us at this point.

When our own infantry reaches the edge of woods or a town we should not move until we can find a place where we can be of some good to the infantry. We should not fire when there is an obstacle between us and our friendly troops. The section leader should be on constant lookout for a good position to use our flat trajectory, making sure to go on reconnaissance beforehand.

Having two weapons in a section, we move forward one weapon at a time while the remaining weapon covers the advancing weapon. It is preferable to move the M19 twin 40mm mount first; the M16 caliber .50 mount does a better job of covering; also in case of a loss the M16 mount's mobilization provides better transportation.

CORPORAL ARTHUR V. GAMBOA
Btry. C, 48th AAA AW Bn (SP)
APO 403, N.Y.C.



BOOK REVIEWS

A Soldier's Estimate

THE RED ARMY TODAY. By Colonel Louis B. Ely. Military Service Publishing Company. 284 pp.; \$3.50.

The Red Army Today first appeared in 1949 to attract the wide attention it merited. Late last year Colonel Ely revised it to include the developments of 1950, and the second edition appeared in January. If by chance you have not yet read this splendid study of the Red Army, delay no longer.

When Lou Ely served as our intelligence officer in the Tenth Army, he was then bearing down on his Jap intelligence and we soon realized that he was an authority. Since then he has spent a few years as a keen student of the Red Army while serving as intelligence officer of the Army Field Forces.

In preparing to write *The Red Army Today* he has gone well beyond the scope of available written reports. Colonel Ely has interviewed a large number of junior and senior officers with first hand experience with the Red Army. Many served in the Red Army and have since escaped through the Iron Curtain. Others are Germans who fought against the Russians on the Eastern Front.

Since most of the new matter presented in the book came from interviews, seven chapters are narrated in the voice of those interviewed. This serves to make it interesting and readable. It also serves to portray vividly what kind of people make up the Red Army and how they operate.

There is nothing routine or perfunctory about the book. In an illuminating manner Colonel Ely develops the characteristics, the tactics and technique of the infantry, armor, and artillery. He also makes an analysis of the relative strengths in the combat arms. The artillery has long been a favorite branch with a preponderant strength in that arm. Chapters are also devoted to the other arms and services, the air support, and to partisan power.

The reader is then taken into some concrete studies of Soviet capabilities. From this point the author gazes into the crystal ball and boldly leads us through an imaginary campaign.

The quotation below indicates the trend of his conclusions:

"The persons who control the international Communist movement are the most ruthless rulers since the days of Genghis Khan. Their intention is to rule the world. Their instruments for the extension of their power are two: Persuasion in the name of an appealing ideology—and military force."

"Persuasion is failing . . .

"But the other instrument of Communist power, military force, is becoming more potent. . . . The armed forces of the Soviet Union are the primary weapon of international Communism today."

The army officer will find *The Red Army Today* highly interesting and illuminating.—C. S. H.

WAR IN KOREA. By Marguerite Higgins. Doubleday & Co., New York. 233 pp.; \$2.75.

Marguerite Higgins flew into Kimpo Airfield on an evacuation plane on June 27th. While others worked their way out she and three other correspondents worked into Seoul only to experience a harrowing night and day with the stream of refugees. But by jeep and afoot she finally managed to get back to the temporary headquarters in Suwon. There she hooked a ride with General MacArthur to Tokyo to file her reports. By June 30th she was back in Suwon.

Of the Army Colonel who told her, "you'll have to go back," she writes, "he was the nervous, officious type that the Army seems to have a talent for producing." She eluded the colonel in a feminine manner and marched herself into the scenes of uncertainty, confusion, panic, and retreat ahead of the North Korean Army. It was too late to elude that; actually she persisted in getting into the middle of it.

She was there when the first American battalions arrived and saw them in front-line action. She was soon familiar at the command posts of Generals Barth, Church, Dean.

She writes an engaging story in a simple and irresistible style. Perhaps Miss Higgins was not the experienced war reporter to see all of it in proper proportion, but what she saw she reports graphically. And she saw a whale of a lot.

She gives the story color. Hear the front-line sergeant: "I asked the tank commander where the hell he thought he was going. He had the nerve to tell me he was heading back because his tank was at an unfair disadvantage against Russian Armor. I asked that slob what sort of armor he thought I had on my back."

Or about all the solicitude for her: "As for 'facilities for ladies'—a euphemism employed by generals when they want to be delicate about latrines—nobody in Korea, including the Koreans, worried much about powder rooms. There is no shortage of bushes in Korea."

By all means read it.—C.S.H.

Silver Star

CORPORAL HENRY C. BLAIR, Battery A, 15th AAA AW Bn. (SP), displayed gallantry in action against an armed enemy at Hoengsong, Korea, on 12 February 1951. Corporal Blair was in charge of an M-16 multiple machine gun half track which was protecting a road intersection to permit the passage of the vehicles of a task force near Wanju, Korea. While his M-16 was engaged in firing at the enemy, Corporal Blair heard a call for assistance from his section chief who had discovered eight seriously wounded soldiers in a burning house. Corporal Blair毫不犹豫地 made his way to the house through intense enemy fire to assist in carrying the wounded men to a place of comparative safety, after which he helped to load them onto passing vehicles for evacuation. Corporal Blair's gallant actions resulted in saving the lives of eight men and reflect great credit on himself and the military service. x x x New York.

PEACE CAN BE WON. By Paul G. Hoffman. Doubleday & Co. 179 pp.; \$2.50.

From a wealth of global experience gained as former head of ECA, Mr. Hoffman has vividly stated the problem confronting the free world today and points to a possible solution requiring only the concurrence of the Kremlin to make the winning of the peace a reality.

The author calls for a "clearly defined program which will give a sound direction to the conduct of . . ." a war should it come. "We should wage war not to win a war, but to win a peace."

With those basic observations, he develops his theme, calling for a return to a bipartisan or American foreign policy.

Four of the book's ten chapters are devoted to the military, economic, political and informational considerations that confront America and the United Nations. In each he moves from one point to the next with clarity and conviction.

In conclusion he states, "During the decade ahead of us, we must be willing to strive and sweat and sacrifice enough to wage the peace with high skill and consecration. . . ."

A timely book on all counts, it is important that Americans read it. It is especially recommended to military personnel.—R.W.O.

THE U.S. MARINES AND AMPHIBIOUS WAR. By Jeter A. Isely and Philip A. Crowl. Princeton University Press. 590 pp.; \$7.50.

This book sets forth in an interesting, objective manner the development of amphibious techniques in World War II and the significant victories achieved through the medium of amphibious operations.

Maximum utilization of naval gunfire and the exploitation of amphibious vehicles played large parts in the Marine victories. Aside from logistic considerations, amphibious vehicles were invaluable for early establishment of artillery on the beach. Also, neighboring islets were often seized prior to the main landing to permit artillery support from the inception of the assault, as at Kwajalein.

Of particular interest was the development of the Marine close air support techniques. Deviation from standard Navy tactics in direct support of fleet and landing operations began at Bougainville the latter part of 1944 when

Silver Star

SERGEANT FIRST CLASS ELMER SNODGRASS, Battery A, 15th AAA AW Bn. (SP), displayed gallantry in action against an armed enemy at Hoengsong, Korea, on 12 February 1951. Sergeant Snodgrass was protecting a road intersection with the two M-16 multiple machine gun half tracks of his section to permit the passage of a withdrawing task force. While his weapons were firing against the numerically superior enemy, Sergeant Snodgrass saw a wounded soldier crawl out of a burning house. Making his way through intense enemy mortar, automatic weapons and small arms fire, he rendered first aid to the wounded man and subsequently discovered seven other seriously wounded men in the house, all of whom were on litters and unarmed. While Sergeant Snodgrass was rendering first aid to them, the house was hit by enemy mortar fire. With the assistance of three members of his section, he carried the wounded men to a place of comparative safety. The gallant actions of Sergeant Snodgrass resulted in saving the lives of eight comrades and reflect great credit on himself and the military service. x x x Virginia.

ground-based air liaison parties, in direct communication with pilots, successfully coached planes to targets. In the remaining campaigns, air support of ground troops became closely integrated with naval gunfire and artillery support.

The Marines recognized during the Palau campaign the advisability of having trained shore parties for beachhead organization, as the Army did, rather than depending on a hasty provision of service organizations. The culmination of proper shore party training and experience was demonstrated in the highly successful logistical support achieved in the Iwo Jima and Okinawa campaigns to follow. Technological improvements of equipment have also made beachhead operations more efficient.

It had been the Marine task, in their sphere of operations in the Pacific, to attack defended localities or small islands that could not be by-passed. Amphibious procedures were continually improved as a result of these experiences. The basic pattern of amphibious doctrine remained unchanged throughout the war.

In future conflicts when ports may have been bombed out, the author points out that an even higher proportion of troops and supplies must be landed over beaches than in World War II. It is foreseen that the atom bomb will not forestall amphibious operations but will require a greater degree of dispersion than practiced in the past.—JAMES E. HARPER, Lt. Col., Engr.

(Continued on page 55)

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Cowles, Stuart L., to Second Army 2308th ASU, KY ROTC Instr Gp, Eastern Ky State College, Richmond, Ky.

Gibbs, Gerald J., to 47th AAA Brigade, Camp Stewart, Ga.

Hafer, Joseph B., to 2327th ASU, Del ROTC Instr Gp, Univ of Del, Newark, Del.

Mevers, Harry F., to First Army, 56th AAA Brigade, Camp Edwards, Mass.

Pryor, Ralph H., to Stu Det, Army Language School, Presidio of Monterey, Calif.

Speidel, George S., Jr., to 4051st ASU, TAS, Ft. Sill, Okla.

Watkins, Thomas H., to Hq ASA, 8600th AAU, Washington, D. C.

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Byrne, Jerome S., to 22d AAA Group, Ft. Custer, Mich.

Burrows, John E., to 35th AAA Brigade, Ft. Meade, Md.

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Wright, John H., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.



Book Reviews

(Continued from page 53)

THE NAVY AND THE INDUSTRIAL MOBILIZATION IN WORLD WAR II. By Robert H. Connery. Princeton University Press. 514 pp.; \$6.00.

The author of this history of the development of the office of the Chief of Naval Material is a Naval Reserve Officer, now professor of Public Administration at Duke University. His account is based on access to Navy Department records.

It deals with the Navy's World War II experience in three significant fields: civilian control of the military, the implementation of that control in the Office of the Secretary of the Navy, and the administrative integration of the material procurement program. It covers the Navy's problems in material procurement, development of policies and relationships between civilian administration and military operation, and crystallization of these relationships in the Navy Re-organization Act of 1948.

It includes vignettes affecting many diverse personalities, among them, James V. Forrestal is portrayed as the guiding figure who injected many policies into the administrative processes of the Navy Department. The book stresses the need for established administrative procedures within a military executive department if procurement problems are to be properly related to strategic plans; emphasizing that such relationship should be in force before the outbreak of a major war and that personnel in both of these two areas of major interest should develop

mutual understanding of their problems. The transition of industrial mobilization in this country before and after Pearl Harbor is traced by a convenient chronology.

This work is of interest to individuals doing business with the armed services; it discusses the various phases of contracts, prices, control, materials, manpower, finance, plant operation, priorities, etc. It is of interest to those concerned with the problem of logistic planning particularly in the procurement field of logistics and of general interest to those who would appreciate the contributions of James V. Forrestal to an effective military establishment.—LT. COL. J. D. STEVENS.

GEOGRAPHY IN THE EIGHTEENTH CENTURY. Edited by Griffith Taylor. The Philosophical Library, Inc., 15 East 40th Street, New York City. 622 pp.; \$8.75.

This work is a compendium representing the specialized effort of seven American, five English, six Canadian, and two Slavic scholars.

The contents are presented in three general parts. In the first, concerning the evolution of geography and its philosophical basis, the reader is led through the developments of French, German, and Western Slavic schools of thought on the subject with a concluding discussion of the conflicting theses of environmentalism and possibilism. The second section dealing with environment includes an examination of geomorphology, meteorology, climate, and soils.

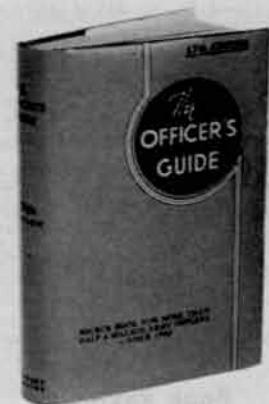
Section 2 continues with the basic effect of these environmental factors on pioneers and covers the regional characteristics of the tropic and polar regions. In the third part, the relationship of geography in specialized fields is treated: its effect on empire, race, sociology, urban development, aviation, and on geopolitics. As indicated in the preceding summarization of the scope, this book is exhaustive in its technical detail and erudite presentation. It can be described as an excellent reference text, and includes a glossary of unusual geographical terms.

The technical terminology and academic detail of this volume make it primarily of interest to specialists in the various fields related to geography or to those who could use it for textual or technical reference. For such purposes, its comprehensiveness gives it a special place on the reference shelf.—LT. COL. J. D. STEVENS.

Books Received

Manual For Courts-Martial, 1951.	
Gov't Printing Office	\$2.75
◊ ◊ ◊	
The American People and Foreign Policy. By Gabriel A. Almond.	
Harcourt, Brace & Co.	3.75
◊ ◊ ◊	
First Steps In AA Gunnery. By Capt. B. D. Copland. Gale & Polden, Ltd.	British
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My First Eighty-three Years In America. By James W. Gerard.	
Doubleday & Co., Inc.	\$3.50

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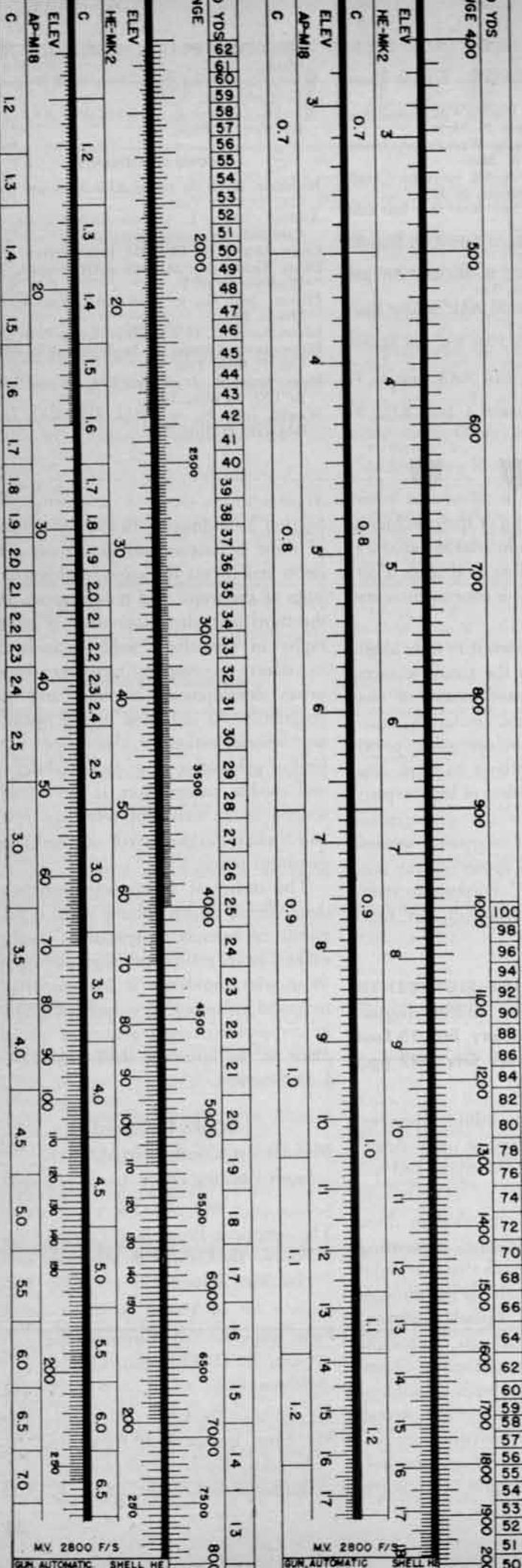
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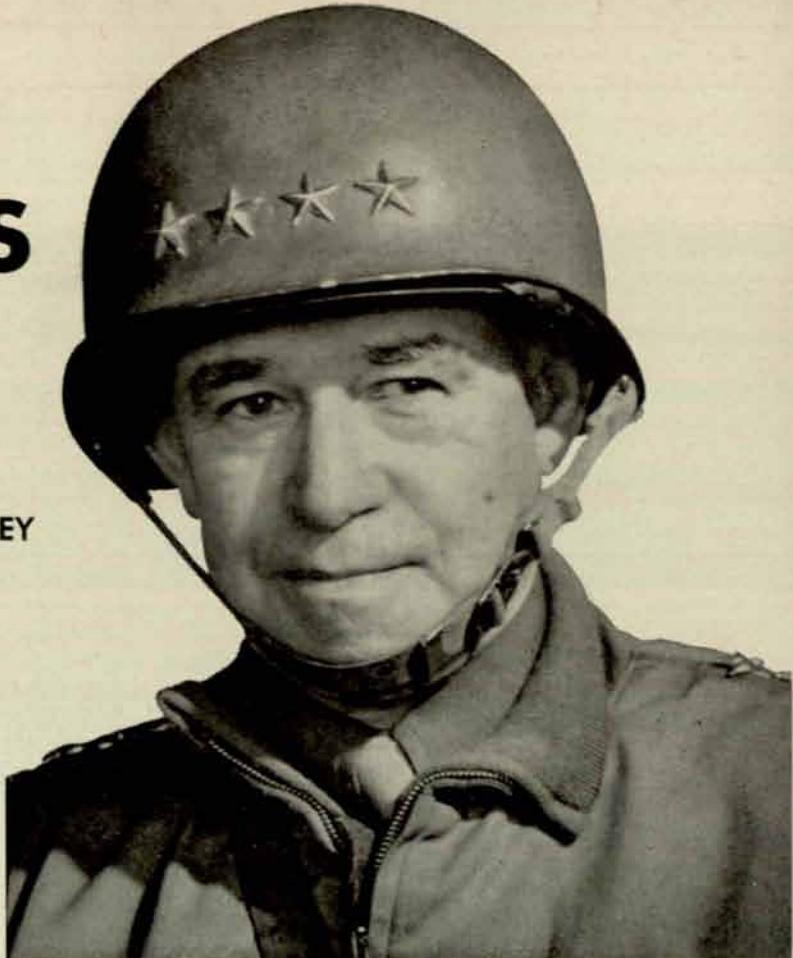
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